TOSHIBA

FILE NO. 810-200546

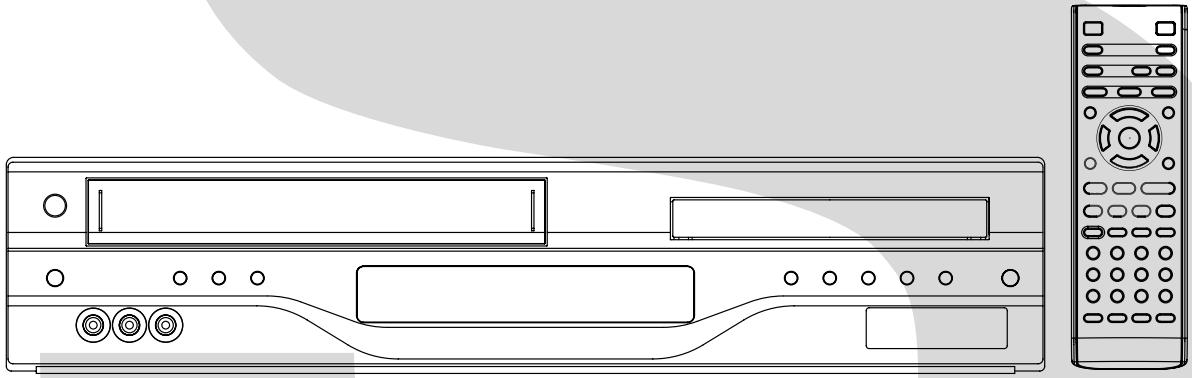
SERVICE MANUAL

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V393SU1

-NOTICE-

Please see the rating label on the back panel and confirm the model name before repair.



DOCUMENT CREATED IN JAPAN, May, 2005

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J2F40101A SH 05/04

Printed in Thailand

TOSHIBA

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V393SU1

OWNER'S MANUAL

VHS Hi-Fi SQPB

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©2005 Toshiba Corporation
This device does not tape-record copy protected DVD Video Discs.

SAFETY PRECAUTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this appliance to rain or moisture.**

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

FCC NOTICE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the partly responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

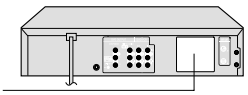
CAUTION: THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS USER'S GUIDE CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a soft dry cloth for cleaning the exterior cabinet only.
6. **ATTACHMENTS**
   The manufacturer of this unit does not make any recommendations for attachments, as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and/or the manufacturer's instructions have been adhered to.
10. **POWER SOURCE**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

IMPORTANT SAFEGUARDS

13. LIGHTNING
To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.

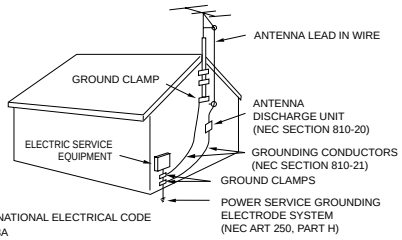
14. POWER LINES
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall onto or against such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.

15. OVERLOADING
Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.

16. OBJECT AND LIQUID ENTRY
Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

17. OUTDOOR ANTENNA GROUNDING
If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)
NEC-NATIONAL ELECTRICAL CODE S2898A

18. SERVICING
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
For example:
a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f . When the unit exhibits a distinct change in performance, this indicates a need for service.

IMPORTANT SAFEGUARDS / Power source

19. REPLACEMENT PARTS
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock or other hazards.

20. SAFETY CHECK
Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

21. HEAT
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

22. DISC TRAY
Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

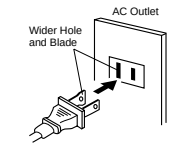
23. CONNECTING
When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause a product damage. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

24. LASER BEAM
Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

25. DISC
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

26. NOTE TO CABLE TV SYSTEM INSTALLER
This reminder is provided to call the Cable TV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Power source



Polarized AC Cord Plug
(One blade is wider than the other.)

TO USE AC POWER SOURCE
Use the AC polarized line cord provided for operation on AC. Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.

Notes:
- Never connect the AC line cord plug to other than the specified voltage (120V 60Hz). Use the attached power cord only.
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

Precautions

Notes on handling

- When shipping the DVD/VCR, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD/VCR. Do not leave rubber or plastic products to contact the DVD/VCR for a prolonged period. They will leave marks on the finish.
- The top and rear panels of the DVD/VCR may become warm after a long period of use. This is not a malfunction.
- When the DVD/VCR is not in use, be sure to remove the disc and the video cassette turn off the power.
- If you do not use the DVD/VCR for a long period, the unit may not function properly in the future. Turn on and use the DVD/VCR occasionally.

Notes on locating

- Place the DVD/VCR on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc or the video tape may become dis-aligned and damage the DVD/VCR.
- When you place this DVD/VCR near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD/VCR away from the TV, radio or VCR.

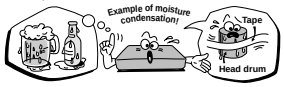
Notes on cleaning

Use a soft, dry cloth for cleaning.
- Use a dry cloth to wipe.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD/VCR.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

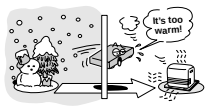
Note on moisture condensation

Moisture condensation damages the DVD/VCR. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the head drum or the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD/VCR.

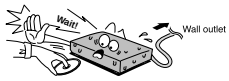


■ **Moisture condensation occurs during the following cases.**
- When you bring the DVD/VCR directly from a cold place to a warm place.
- When you use the DVD/VCR in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD/VCR in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD/VCR in a humid place.



■ **Do not use the DVD/VCR when moisture condensation may occur.**

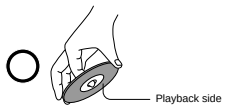
If you use the DVD/VCR in such a situation, it may damage discs and internal parts. Remove the disc or the video tape, connect the power cord of the DVD/VCR to the wall outlet, turn on the DVD/VCR, and leave it for two or three hours. After two or three hours, the DVD/VCR will have warmed up and evaporated any moisture. Keep the DVD/VCR connected to the wall outlet and moisture condensation will seldom occur.



Notes on discs

On handling discs

- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.

On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.

- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

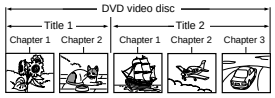
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



Video CD/Audio CD

Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

The unauthorized recording, use, distribution, or revision of television programs, videotapes, DVDs and other materials, is prohibited under the Copyright Laws of the United States and other countries, and may subject you to civil and/or criminal liability.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD/VCR. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD/VCR may not respond to all operating commands. This is not a defect in the DVD/VCR. Refer to instruction notes of discs.

"✋" may appear on the TV screen during operation. A "✋" means that the operation is not permitted by the DVD/VCR or the disc.
For example, sometimes it is unable to stop the playback of copyright message of the disc when the STOP (■) button is pressed. Alternatively, the "✋" may also indicate that the feature is not available for the disc.

Notes on region numbers

The region number of this DVD/VCR is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find (2) or (ALL), disc playback will not be allowed by the player. (In this case, the DVD/VCR will display a message on-screen.)

On Video CDs

This DVD/VCR supports Video CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **Video CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD/VCR in the same way as an audio CD.
- **Video CD equipped with PBC function (Version 2.0)**
  In addition to operation of a Video CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD/VCR can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
	DVD VIDEO		8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
Video CDs	COMPACT disc DIGITAL VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

The following discs are also available.
- DVD-R/RW discs of DVD video format
- CD-R/CD-RW discs of CD-DA, Video CD, SVCD, MP3, WMA or JPEG format
- Kodak Picture CD and FUJICOLOR CD format

Some of these discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-ROM, Photo CD, etc., or non standardized discs even if they may be labeled as above.
- Some CD-R/RWs cannot be played back depending on the recording conditions.
- This DVD/VCR uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

Because of problems and errors that can occur during the creation of DVD and Video CD software and/or the manufacture of DVD and Video CD discs, Toshiba cannot guarantee that this DVD/VCR will play every feature of every DVD bearing the DVD logo and/or every Video CD bearing the CD logo. As one of the creators of DVD technology, Toshiba DVD players are manufactured using the highest standards of quality, and as a result, such incompatibilities are rare. If you happen to experience any difficulty playing a DVD or a Video CD on a this DVD/VCR, please feel free to call our Contact listed in "How to Obtain Warranty Services" (page 65).

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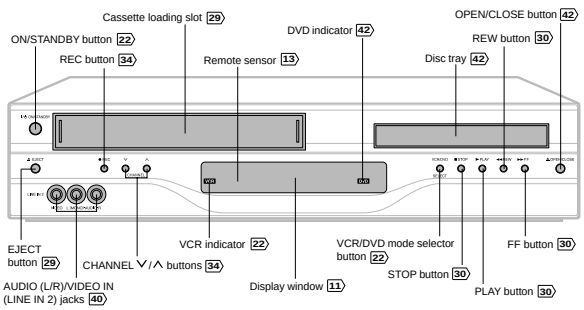
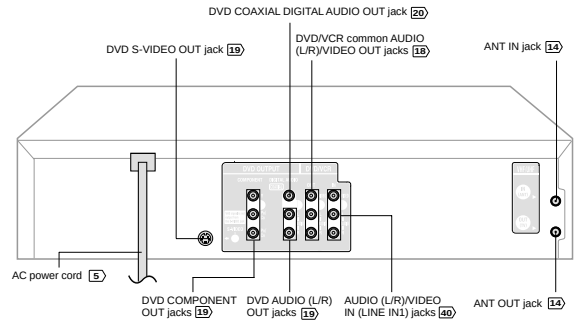
Identification of controls

See the page in ▭ for details.

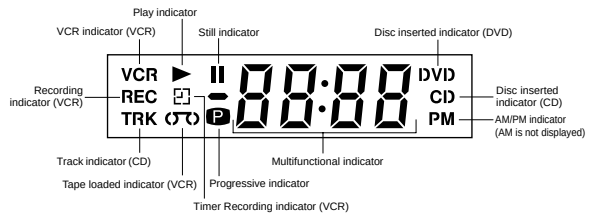
Front panel



Rear panel

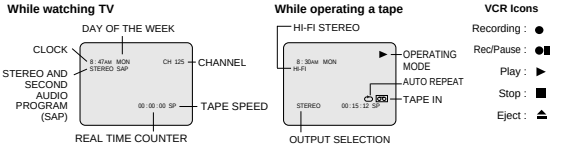

DVD COAXIAL DIGITAL AUDIO OUT jack 20
DVD S-VIDEO OUT jack 19
DVD/VCR common AUDIO (L/R)/VIDEO OUT jacks 18
ANT IN jack 14
AC power cord 5
DVD COMPONENT OUT jacks 19
DVD AUDIO (L/R) OUT jacks 19
AUDIO (L/R)/VIDEO IN (LINE IN1) jacks 40
ANT OUT jack 14

Display window



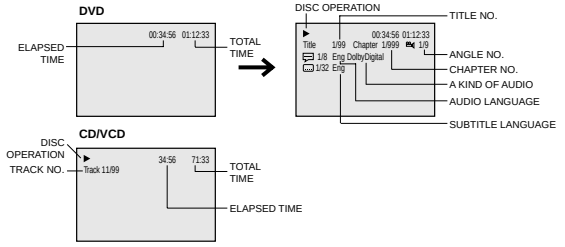
VCR operation status

Press **CALL** to display VCR operation status on the screen.
To cancel the display, press **CALL** again.



DVD/CD/VCD operation status

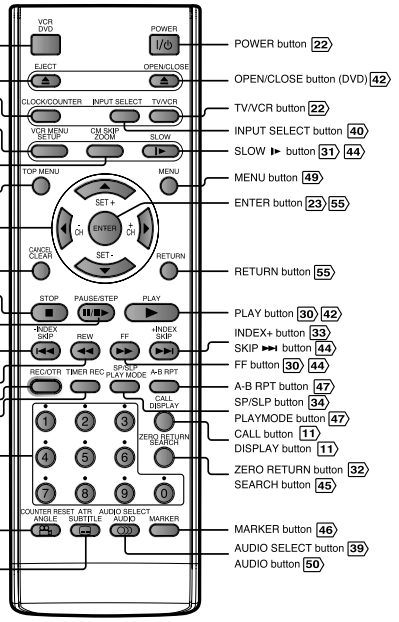
Each press of **DISPLAY**, the status display of the disc will appear on the screen and change as follows.



Identification of Controls (Continued)

The instructions in this manual describe the functions on the remote control. See the page in ⇨ for details.

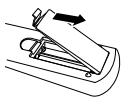
Remote control



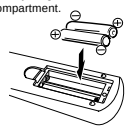
MENU button
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "DVD Menu." 49

Inserting batteries

1 Open the battery compartment cover in the direction of the arrow.



2 Install two "AAA" batteries (supplied), paying attention to the polarity diagram in the battery compartment.



3 Replace the compartment cover.

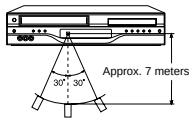
Caution:
Never throw batteries into a fire.

Notes:
- Be sure to use AAA size batteries.
- Dispose of batteries in a designated disposal area.
- Batteries should always be disposed of with the environment in mind. Always dispose of batteries in accordance with applicable laws and regulations.
- If the remote control does not operate correctly, or if the operating range becomes reduced, replace batteries with new ones.
- When necessary to replace batteries in the remote control, always replace both batteries with new ones. Never mix battery types or use new and used batteries in combination.
- Always remove batteries from remote control if they are dead or if the remote control is not to be used for an extended period of time. This will prevent battery acid from leaking into the battery compartment.

Remote control basics

- Press **POWER** to turn the DVD/VCR on or off.
- Select your desired operating mode (DVD or VCR) using **VCR DVD**. (DVD or VCR indicator on the front panel will show you which mode is selected.)
- Press **CH +** or **CH –** to move through the channels one channel at a time.
- The **▲/▼/◀/▶** are also used to navigate on-screen menu system.
- You can directly access specific channels using **Direct channel selection buttons (0–9)**.
- Each press of **VCR DVD** on the remote control, switches the screen between the VCR screen (VCR mode) and the DVD screen (DVD mode).

Operation
- Aim the remote control at the remote sensor and press control buttons to operate.
- Operate the remote control within 30° angle on either side of the remote sensor, up to a distance of approx. 7 meters.



Antenna connections

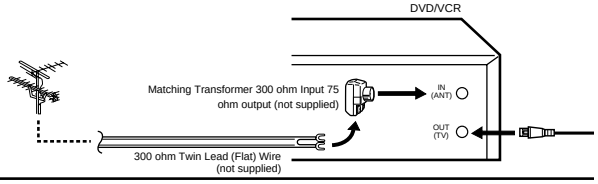
If you are using an antenna system, follow these instructions. If you are a Cable TV subscriber, skip ahead to page 16 for the proper connections.

Antenna to DVD/VCR connection

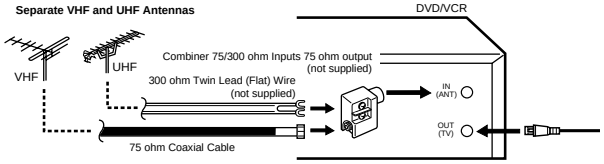
The DVD/VCR must be connected "between" the antenna and the TV. First, disconnect the antenna from the TV and connect it to the DVD/VCR. Then connect the DVD/VCR to the TV. Below are 3 common methods of connecting an antenna system to a DVD/VCR. Find the type of antenna system you are using and follow the connection diagram.

1 **Combination VHF/UHF Antenna with 75 ohm Coaxial Cable**

2 **Combination VHF/UHF Antenna with 300 ohm Twin Lead (Flat) Wire**


DVD/VCR
Matching Transformer 300 ohm Input 75 ohm output (not supplied)
300 ohm Twin Lead (Flat) Wire (not supplied)
IN (ANT)
OUT (TV)

3 **Separate VHF and UHF Antennas**



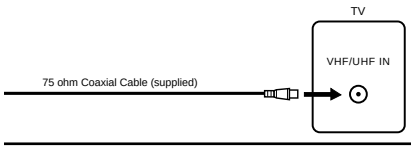
Note: If both VHF and UHF antennas have 300 ohm twin lead (flat) wires, use a combiner having two 300 ohm inputs and one 75 ohm output.

Notes:
- A clear picture will not be obtained by the DVD/VCR unless the antenna signal is good. Connect the antenna to the DVD/VCR properly.
- For better quality recording, an indoor antenna or a telescopic antenna is not recommended. The use of an outdoor type antenna is required.
- If you are not sure about the connection, please refer to qualified service personnel.

DVD/VCR to TV connection

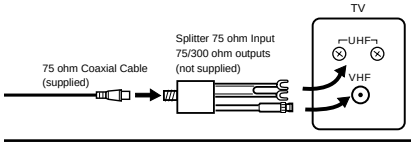
After you have connected the antenna to the DVD/VCR, you must connect the DVD/VCR to the TV. Below are 3 common methods of connecting your DVD/VCR to a TV. Find the type of TV you are using and follow the connection diagram.

This DVD/VCR has a single 75 ohm output for connection to a TV. If your TV has separate VHF and UHF antenna inputs (numbers 2 and 3 below), use a splitter to connect the DVD/VCR to the TV for VHF and UHF reception.



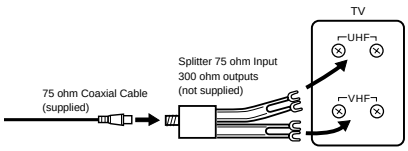
Note: **If a VHF or UHF antenna is used, set the TV/CABLE menu option to the "TV" mode.**

TV with single 75 ohm VHF/UHF antenna input



Note: **If a VHF or UHF antenna is used, set the TV/CABLE menu option to the "TV" mode.**

TV with 300 ohm UHF and 75 ohm VHF antenna inputs



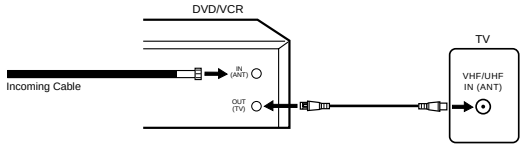
Note: **If a VHF or UHF antenna is used, set the TV/CABLE menu option to the "TV" mode.**

TV with 300 ohm UHF and 300 ohm VHF antenna inputs

Cable TV connections

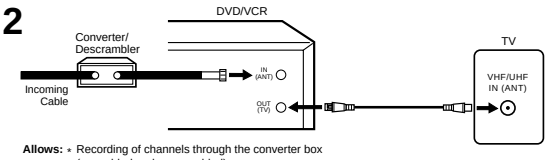
Many cable companies offer services permitting reception of extra channels including pay or subscription channels. This DVD/VCR has an extended tuning range and can be tuned to most cable channels without using a cable company supplied converter box, except for those premium channels which are intentionally scrambled. If you subscribe to a premium channel which is scrambled, you must have a descrambler box for proper reception.

1



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording of one channel while watching another.

2

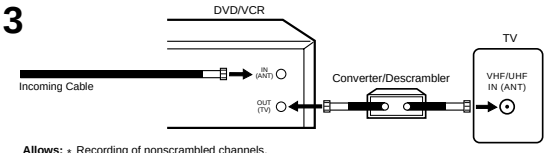


Allows:
- Recording of channels through the converter box (scrambled and unscrambled).
- Using the programmable timer to record only the channel selected at the converter box.

Prevents:
- Recording one channel while watching another.
- Using the DVD/VCR tuner to select channels.

Note:
To record from converter/descrambler, DVD/VCR tuner must be tuned to the converter output channel, usually channel 3 or 4.

3



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording an unscrambled channel while watching any channel selected at the converter box.

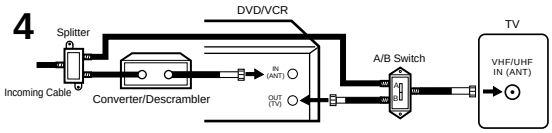
Prevents: Recording scrambled channels.

Note:
If you are playing a tape or using the tuner built into the DVD/VCR, the converter must be set to the video channel output of the DVD/VCR (either 3 or 4).

Note: Whenever a Converter/Descrambler box is placed before the DVD/VCR, you must tune the DVD/VCR to the output of the Converter/Descrambler box, usually channel 3 or 4.

IMPORTANT: Make sure the TV/CABLE menu option is set to the "CABLE" mode.
This DVD/VCR cannot receive scrambled programs since it does not contain a descrambler. In order to receive scrambled programs, your existing descrambler must be used. Descrambler boxes are available from cable companies. Consult your local cable company for more information concerning connection to their descrambler equipment. There are many ways to connect your DVD/VCR to a cable system. Below are six common methods of connection.

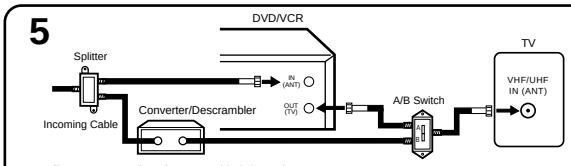
4



Allows:
- Recording of one channel while watching another.
- Using the programmable timer to record only the channel selected at the converter box.
- Recording of all channels through the converter box.

Prevents:
- Watching scrambled channels while recording another channel.
- Using the DVD/VCR tuner to select channels.

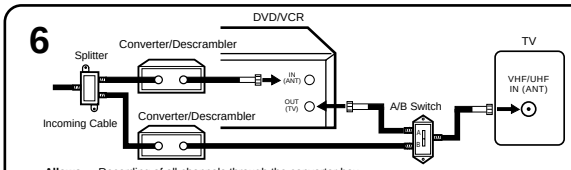
5



Allows:
- Recording of nonscrambled channels.
- Recording of one channel while watching another.
- Watching premium channels through the converter while recording nonscrambled channels.
- Using the programmable timer.

Prevents: Recording scrambled channels.

6



Allows:
- Recording of all channels through the converter box.
- Recording a scrambled or unscrambled channel while watching another (scrambled or unscrambled) channel.
- Using the programmable timer to record only the channel selected at the converter box.

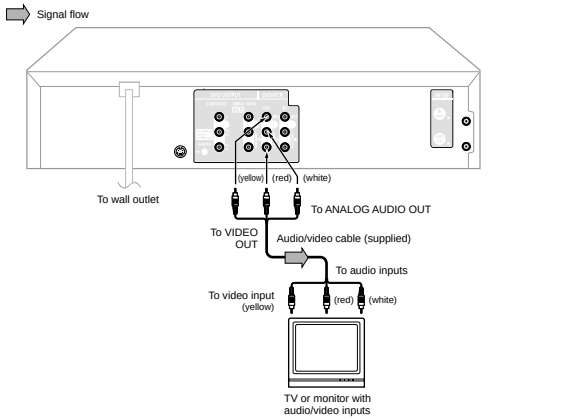
Prevents: Using the DVD/VCR tuner to select channels.

Connecting to a TV

Connect the DVD/VCR to your TV.

Note: This method transports VHS and DVD-video signals. For enhanced DVD-video performance, we recommend you also connect the S-video or ColorStream® component video outputs to your TV/monitor. 19

Connecting to a TV



Notes:
- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD/VCR to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the left and right audio outputs of the DVD/VCR to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD/VCR directly to your TV. If you connect the DVD/VCR to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

S-video output
An S-Video connection is superior to Video (Yellow) output. Use this method for DVD playback when the connected television has S-Video input, and does not have component video inputs.

Component video outputs

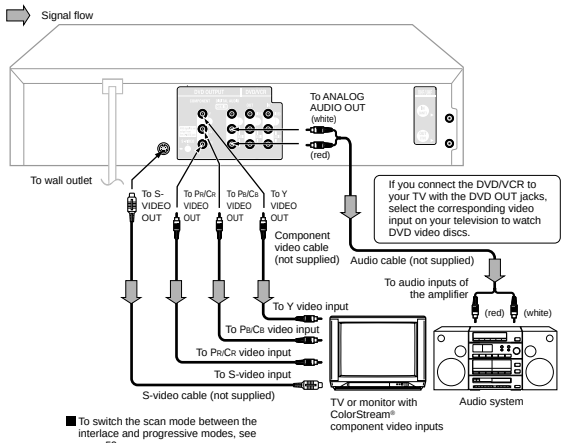
■ **PROGRESSIVE outputs**
Some TVs or monitors are equipped with component video inputs that are capable of reproducing a progressively scanned video signal. Connecting to these inputs allows you to view the highest quality pictures with less flicker.

■ **INTERLACED outputs**
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy the highest quality DVD picture playback.

Notes:
- Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, CB, CR)
- In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Connecting to an audio system and TV equipped with S-video input/component video inputs

The S-video output and component video output transports the DVD-video signal exclusively and will deliver enhanced DVD video picture performance.


Signal flow
To ANALOG AUDIO OUT (white)
(red)
To wall outlet
To S-VIDEO OUT
To PB/CB VIDEO OUT
To PR/CR VIDEO OUT
To Y VIDEO OUT
Component video cable (not supplied)
If you connect the DVD/VCR to your TV with the DVD OUT jacks, select the corresponding video input on your television to watch DVD video discs.
Audio cable (not supplied)
To audio inputs of the amplifier
(red)
(white)
To Y video input
To PB/CB video input
To PR/CR video input
To S-video input
S-video cable (not supplied)
TV or monitor with ColorStream® component video inputs
Audio system

■ To switch the scan mode between the interlace and progressive modes, see page 59.

Notes:
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD/VCR near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD/VCR away from the tuner and radio.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.
- **When connecting to a TV using the Video or S-video jack, make sure that the Progressive indicator "P" on the display window is not lit. If it is lit, the Video and S-video outputs do not feed the correct signals and you cannot see any picture. To turn off the Progressive indicator, select PROGRESSIVE scan Off 59.**

Connecting to optional equipment

You can enjoy high quality dynamic sounds of DVD video discs or audio CDs by connecting the DVD/VCR to optional audio equipment.

For connection to your TV, see "Connecting to a TV" 18 19.

• This selection uses the following reference mark.

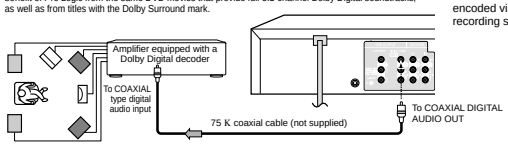
: Front speaker	: Center speaker
: Rear speaker	: Signal flow
: Sub woofer	

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs encoded via the Dolby Digital recording system with this dynamic realistic sound by connecting the DVD/VCR to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

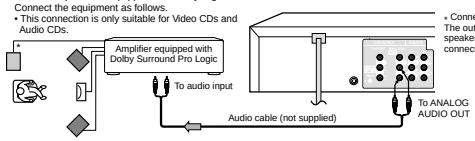
• Use DVD video discs encoded via the Dolby Digital recording system.


Amplifier equipped with a Dolby Digital decoder
To COAXIAL type digital audio input
75 K coaxial cable (not supplied)
To COAXIAL DIGITAL AUDIO OUT

Connecting to an amplifier equipped with Dolby Surround Pro Logic

Dolby Surround Pro Logic
You can enjoy the dynamic realistic sound of Dolby Surround Pro Logic by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Surround Pro Logic sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.
  • This connection is only suitable for Video CDs and Audio CDs.



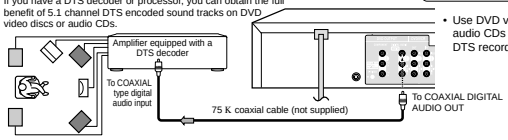
* Connect one or two rear speakers. The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

• Use DVD video discs or audio CDs encoded via the DTS recording system.

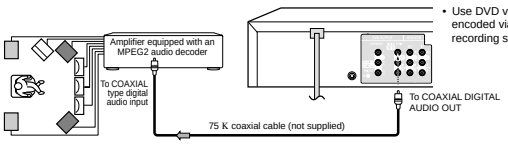

Amplifier equipped with a DTS decoder
To COAXIAL type digital audio input
75 K coaxial cable (not supplied)
To COAXIAL DIGITAL AUDIO OUT

Warning
When playing DTS-encoded discs (audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD/VCR are connected to an amplification system. (Do not leave the ANALOG AUDIO OUT (L/R) wires dangling.) To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.

Connecting to an amplifier equipped with an MPEG2 audio decoder

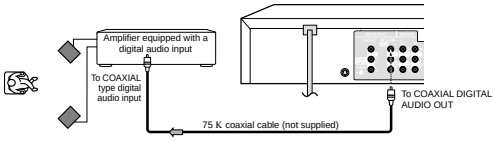
MPEG2 sound
You can enjoy motion picture and live concert DVD video discs encorded via the MPEG2 recording system with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

• Use DVD video discs encoded via the MPEG2 recording system.


Amplifier equipped with an MPEG2 audio decoder
To COAXIAL type digital audio input
75 K coaxial cable (not supplied)
To COAXIAL DIGITAL AUDIO OUT

Connecting to an amplifier equipped with a digital audio input

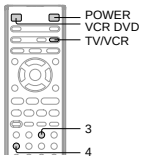
2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To COAXIAL type digital audio input
75 K coaxial cable (not supplied)
To COAXIAL DIGITAL AUDIO OUT

Notes:
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers and your hearing may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting the video channel

When a TV is connected with the 75 ohm coaxial cable only.
To view playback of a recorded tape or DVD disc, or to watch a program selected by the VCR's channel selector, the TV must be set to channel 3 or 4 (video channel).

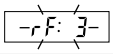


Setting the video channel

1 **Press and hold 3 or 4 on the remote for 3 seconds in standby mode.**

3 OR 4

The video channel will start to flash for 3 seconds in the display window.



2 **Press POWER to turn on the DVD/VCR.**

POWER

3 **Press VCR DVD selector to select the VCR mode.**

VCR DVD

The VCR indicator on the front panel will light.

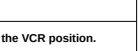
VCR

4 **Turn ON the TV and set to CH 3 or 4 to correspond with the channel selected in step 1.**

5 **Press TV/VCR to select the VCR position.**

TV/VCR

The VCR indicator will appear in the display window.



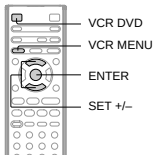
6 Select any channel to receive a TV station in your area. The channel number will appear on the screen for about 4 seconds.

■ For a push-button TV tuner
If CH 3 or 4 corresponding to the video channel cannot be tuned on your TV, proceed as follows: set the VCR 3/4 channel selector and the TV to CH 3 or 4, play back a prerecorded tape and tune the TV to receive a sharp color picture from the video cassette recorder. Refer to your TV owner's manual for details.

Note:
If the unit does not operate properly, or No key operation (by the unit and/or the remote control): Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

Setting the language

You can choose from three different languages (English, French and Spanish) for the on-screen displays.



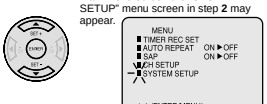
Setting the language

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Press VCR MENU.**

VCR MENU SETUP

The VCR menu screen will appear. Press **SET +** or **–** to select "SYSTEM SETUP", then press **ENTER**.
If you use the unit for the first time and press **VCR MENU**, instead of the main menu screen the "SYSTEM SETUP" menu screen in step **2** may appear.



2 **Press SET + or – to select "LANGUAGE", then press ENTER.**

3 **Press SET + or – to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press ENTER.**

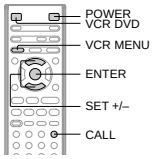
4 **Press VCR MENU until the MENU screen is cleared.**

VCR MENU SETUP

Notes:
- Both the VCR and the DVD have their own player menus 55.
- If no buttons are pressed for more than 60 seconds, the VCR MENU screen will return to normal TV-operation automatically.

Clock setting

The AUTO CLOCK function will automatically set the built-in clock (Month, Day, Year and Time) when the DVD/VCR is connected to an Antenna or Cable system and it is turned off. The DVD/VCR searches for a station in your area containing the necessary AUTO CLOCK setting signals. Once received, it will take approximately 4 minutes for the clock to set itself automatically.



AUTO CLOCK setting

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Connect the Antenna or Cable system.**
- If you use a cable box, turn it on.

2 **Plug the AC power cord to the AC outlet.**

3 **Make sure the DVD/VCR is turned off.**

POWER

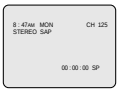
- If you press **POWER**, the Auto Clock set is not programmed.

4 **Wait at least three minutes and press POWER.**

POWER

5 **Press CALL to check the clock setting on the on screen display.**

CALL DISPLAY



6 **If the clock is not set, check the antenna condition. The AUTO CLOCK may not function properly if the reception condition is not good.**

AUTO CLOCK adjustment

The auto clock adjustment will be updated at 6:00 AM, 12:00 PM and 6:00 PM everyday when the DVD/VCR turned off.
- If you use a cable box and you want AUTO CLOCK adjustment to be performed, the cable box must be left on.
- The AUTO CLOCK adjustment is not effective when there is a difference of more than 5 minutes exists between the built-in clock time and the actual time.

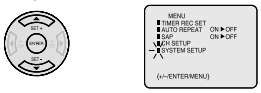
To set AUTO CLOCK to off

When shipped from factory the AUTO CLOCK is set to "ON". But if you do not want AUTO CLOCK setting:

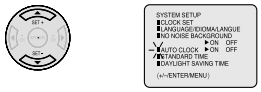
1 **Press VCR MENU.**

VCR MENU SETUP

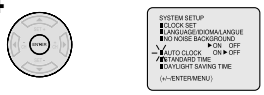
2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**



3 **Press SET + or – to select "AUTO CLOCK".**



4 **Press ENTER to select "OFF".**



5 **Press VCR MENU repeatedly to return to the normal screen.**

VCR MENU SETUP

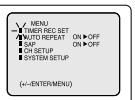
- When the AUTO CLOCK is set to "OFF", the AUTO CLOCK adjustment does not function.
- Set the clock manually 26.

To set STANDARD TIME

In the rare event that you live within broadcast range of two stations in two different time zones, the DVD/VCR may recognize the wrong station for the AUTO CLOCK setting.
To correct the situation:

1 **Press VCR MENU.**

VCR MENU SETUP



2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

3 **Press SET + or – to select "STANDARD TIME", then press ENTER.**

4 **Press SET + or – to select your time zone, then press ENTER.**

ATLANTIC	: GMT–4hours
EASTERN	: GMT–5hours
CENTRAL	: GMT–6hours
MOUNTAIN	: GMT–7hours
PACIFIC	: GMT–8hours
ALASKA	: GMT–9hours
HAWAII	: GMT–10hours
AUTO	: AUTO SET

(GMT: Greenwich Mean Time)

5 **Press VCR MENU until the MENU screen is cleared.**

VCR MENU SETUP

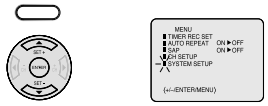
Notes:
- To be able to select the standard time, the clock must first be set by AUTO CLOCK once.
- If you live in Newfoundland and the AUTO CLOCK does not function properly, set the AUTO CLOCK menu option to "OFF" and set the clock manually.

To set DAYLIGHT SAVING TIME

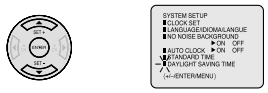
You can set the DAYLIGHT SAVING TIME automatically or manually.

1 **Press VCR MENU.**
Press SET + or – to select "SYSTEM SETUP", then press ENTER.

VCR MENU SETUP



2 **Press SET + or – to select "DAYLIGHT SAVING TIME", then press ENTER.**



3 **Press SET + or – to select one of the options, then press ENTER. Press VCR MENU until the MENU screen is cleared.**

VCR MENU SETUP

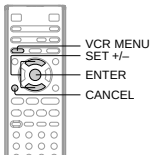
ON: for manual setting (forward one hour)
OFF: for manual setting (back one hour)
AUTO: for automatic setting (read XDS in the signal)

When you want to set the DAYLIGHT SAVING TIME manually, on the first Sunday in April you set to "ON", and on the last Sunday in October you set to "OFF".

Notes:
- When shipped from factory, the DAYLIGHT SAVING TIME is set to "AUTO" position.
- When the clock is not set, DAYLIGHT SAVING TIME setting is not available.
- When there is no DAYLIGHT SAVING TIME in your area, always select "OFF" position in step 3.

Clock setting (Continued)

If the AUTO CLOCK process did not set the date and time correctly, you must set them manually for timer recording and DAYLIGHT SAVING TIME.



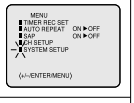
Manual clock setting

EXAMPLE: Setting the clock to "8:30 AM" March, 26 (SAT), 2005.

1 **Press VCR MENU.**

VCR MENU SETUP

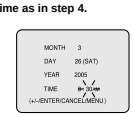
2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**



3 **Press SET + or – to select "CLOCK SET", then press ENTER.**

4 **Press SET + or – to set the month, then press ENTER.**

5 **Set the day, year and time as in step 4.**



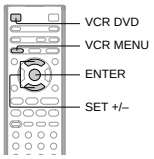
6 **After setting the clock, date and time starts functioning automatically.**

■ **To make corrections any time during the process**
Press **CANCEL** repeatedly until the item you want to change blinks, then press **SET +** or **–**.

Note:
After a power failure or disconnection of the power, the timer settings will be lost. In this case, reset the present time.

Tuner setting

This DVD/VCR is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the DVD/VCR's memory. In addition to normal VHF and UHF channels, this DVD/VCR can receive up to 113 Cable TV channels. To use this DVD/VCR with an antenna, set the TV/CABLE menu option to the TV mode. When shipped from the factory, this menu option is in the CABLE mode.

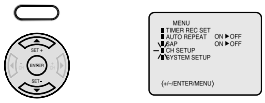


TV/CABLE selection

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Press VCR MENU. Press SET + or – to select "CH SETUP", then press ENTER.**

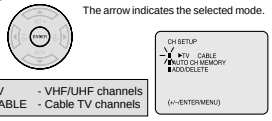
VCR MENU SETUP



2 **Press SET + or – to select "TV/CABLE".**

3 **Press ENTER to select the TV or CABLE mode.**

The arrow indicates the selected mode.



TV	- VHF/UHF channels
CABLE	- Cable TV channels

4 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

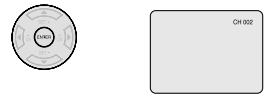
Note:
You can't select "CH SETUP" if you set the channel to "L1" or "L2".

Setting channels automatically

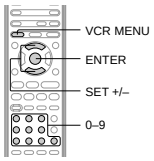
1 **Repeat left step 1 and press SET + or – to select "AUTO CH MEMORY".**

2 **Press ENTER.**

Auto tuning will begin. The channel display will count up and when finished, the screen returns to normal.



Tuner setting (Continued)



To ADD/DELETE channels

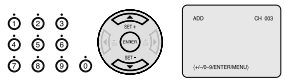
1 **Repeat the step 1 on page 27. Then press SET + or – to select the "ADD/DELETE" and press ENTER.**

2 **To Add or Delete desired channels**

1) Press **Direct channel selection buttons (0–9)** or **SET +/–** to select a channel number you want to add or delete.

2) **To add channels**
Press **ENTER** until "ADD" appears on the screen.
To delete channels
Press **ENTER** until "DELETE" appears on the screen. The channel number will blink

3) Repeat **1)** to **2)** to add or delete other channel.



3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU
SETUP

Noise elimination

When you don't want to receive a weak signal broadcast, a Blue back screen can be obtained by selecting the NO NOISE BACKGROUND "ON". When the unit is shipped from the factory, the NO NOISE BACKGROUND is set to "ON".

1 **Repeat the steps 1–2 on page 26 and press SET + or – to select "NO NOISE BACKGROUND".**

2 **Press ENTER to select "ON" or "OFF" position.**

3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU
SETUP

Loading and unloading a cassette tape

Use only video cassette tapes marked VHS.

Loading

Push the center of the tape until it is automatically inserted.

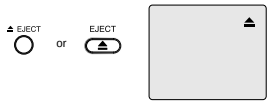
Insert the cassette tape with its labeled side facing up and the erase prevention tab positioned at your left. An inverted cassette tape cannot be inserted.

Automatic power ON
When you insert a cassette tape the DVD/VCR power will turn ON automatically.

Automatic playback
When loading a cassette tape without an erase prevention tab, playback will start automatically.

Unloading

1 Press **EJECT** on the front panel or on the remote.

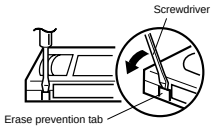


2 Remove the cassette tape.

Automatic tape eject
This DVD/VCR will automatically rewind the tape when the tape has ended. Once the tape is rewound to its beginning, the cassette tape will be ejected automatically.

To prevent accidental erasure

To prevent accidental erasure
Remove the erase prevention tab with a screwdriver.



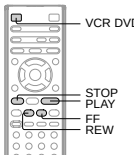
To record again
Cover the hole with a piece of adhesive tape.

Tape speed and maximum recording time

Tape Speed	Video cassette tape				
	T-160	T-120	T-90	T-60	T-30
SP (Standard Play)	2-2/3 hours	2 hours	1-1/2 hours	1 hour	30 minutes
SLP (Super Long Play)	8 hours	6 hours	4-1/2 hours	3 hours	1-1/2 hours

Cassette tape playback

To play a prerecorded tape.

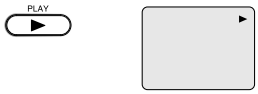


Playback

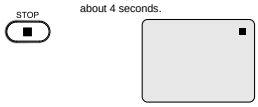
Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light).

1 **Load a prerecorded tape**
(When loading a cassette tape without the erase prevention tab, playback will start automatically).

2 **To start playback**
Press **PLAY**.
Playback will start. " ▶ " will appear on the screen for about 4 seconds.



To stop playback
Press **STOP** once.
The tape will stop but remain fully loaded and ready to play.
" ■ " will appear on the screen for about 4 seconds.



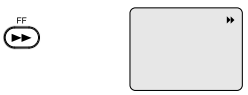
Notes:
- This VCR selects the playback tape speed SP, LP or SLP automatically.
- The Cassette tape and DVD disc can be played back simultaneously. If you press **DVD/VCR** selector, the tape playback and DVD playback alternate with each other on the screen (via CH3, 4 or video connection).

Rewind or forward the tape

Stop the playback or recording via **STOP** on remote.

To rewind the tape:
Press **REW**.

To forward the tape:
Press **FF**.

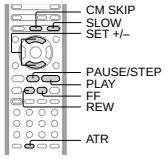


To discontinue the tape-winding, press **STOP**. To switch to playback directly (without **STOP**), press **PLAY**.

■ Forward/Reverse picture search mode

When the tape is being winded, you can switch to picture search mode (see next page). To do this, press **REW** or **FF** and hold it down. The unit will resume the tape advance or rewinding as soon as the button is released.

Special playback



Picture search

Reverse picture search function
Press **REW** once or twice during playback.

Forward picture search function
Press **FF** once or twice during playback.
To return to playback, press **PLAY**.

SPEED SEARCH TIMES

TAPE SPEED	PICTURE SEARCH SPEED	
	PRESS ONCE	PRESS TWICE
SP (Standard Play)	3 X	5 X
LP (Long Play)	7 X	9 X
SLP (Super Long Play)	9 X	15 X

Still picture

Press **PAUSE/STEP** during playback.
To resume normal playback, press **PLAY** or **PAUSE/STEP**.

Slow motion

During playback press **SLOW**.
To return to playback, press **PLAY** or **SLOW**.

■ Slow tracking and vertical lock adjustment
If noise bars appear in the picture during slow motion, press the **SET + /–** to reduce the noise bars.
If the still picture jitters excessively, press **SET +/–** to stabilize the still picture.

Frame by frame picture

Press **PAUSE/STEP** during playback.
Press **SLOW** repeatedly: The picture advances frame by frame.
To return to playback, press **PLAY** or **PAUSE/STEP**.

CM skip

Press **CM SKIP** during playback. The DVD/VCR will search forward through approximately 30 seconds of the tape (e.g. unwanted commercial time) for each press of **CM SKIP** (maximum six presses) and then resume normal playback.

For example : 1 press: 30 seconds of tape
2 press: 60 seconds of tape
3 press: 90 seconds of tape

Adjusting tracking condition

■ Automatic tracking adjustment
Whenever you insert a tape and start playback, the automatic tracking feature continuously analyzes the signal to enable optimum picture quality during playback.

■ Manual tracking adjustment
If automatic tracking cannot eliminate noises well during playback, press **SET +/–** to eliminate the noise. "MANUAL TR." will appear on the screen. Press it briefly for a fine adjustment, or press and hold for a coarse adjustment.

Press **ATR** to reactivate automatic tracking again.
"AUTO TR." will appear on the screen.

Notes:
- The audio output is muted during PICTURE SEARCH, STILL, FRAME ADVANCE and SLOW MOTION.
- During picture search mode there will be noise bars. This is not a defect.
- Playback will commence after approx. 5 minutes to protect the video tape against excessive wear during pause mode.

Video head cleaning

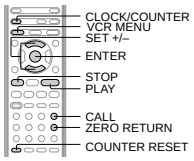
Video head clogging
■ The video heads are the means by which the DVD/VCR reads the picture from the tape during playback. In the unlikely event that the heads become dirty enough to be clogged, no picture will be displayed. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the DVD/VCR checked and cleaned by qualified service personnel.

Good Picture

Snowy Picture

Notes:
- DO NOT ATTEMPT TO CLEAN THE VIDEO HEADS OR SERVICE THE UNIT BY REMOVING THE REAR COVER.
- Video heads may eventually wear out and should be replaced when they fail to produce clear pictures.
- To help prevent video head clogging, use only good quality VHS tapes. Discard worn out tapes.

Convenience function

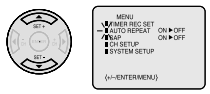


Repeat playback

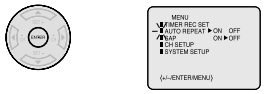
The entire video tape will play until its end. The tape will automatically rewind to the beginning and the playback will be repeated.

1 **Press VCR MENU.**
Press **SET +** or **–** to select "AUTO REPEAT".

VCR MENU SETUP



2 **Press ENTER to select "ON" or "OFF".**
If "ON" is selected, the playback will be repeated endlessly.



3 **Press VCR MENU until the menu screen is cleared.**
If you press **CALL**, "⏲" will appear on the screen (11).

VCR MENU SETUP

4 **To commence playback, press PLAY.**
The playback will be repeated endlessly.

PLAY

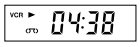
To cancel repeat mode:
Follow the above step **1**, then press **ENTER** to select "OFF" position. Press **VCR MENU** to return to the TV.

Zero return function

This function rewinds the tape to the "00:00:00" counter position automatically.

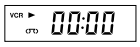
1 **Press CLOCK/COUNTER.**
The counter display shows the tape running time during playback or recording.

CLOCK/COUNTER



2 **Press COUNTER RESET at the desired tape position.**
The counter display will be reset to "00:00:00" position (e.g. the beginning of recording).

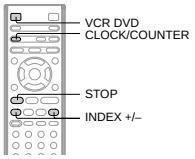
COUNTER RESET ANGLE



3 **Press STOP when playback or recording is completed.**
Press ZERO RETURN.
The tape will automatically rewind or fast forward to the "00:00:00" counter position.

STOP

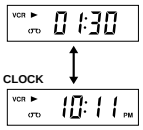
ZERO RETURN SEARCH



Clock/counter display

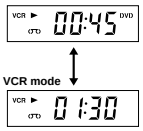
Press **CLOCK/COUNTER**. The clock and tape counter alternate with each other in the display window.

CLOCK/COUNTER



Press **VCR DVD** selector. The DVD mode and the VCR mode alternate with each other in the display.

VCR DVD



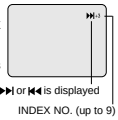
Notes:
- If you rewind the tape beyond "00:00:00", a minus sign ("–") will be displayed in front of the time.
- When you load a tape, the counter will reset to "00:00:00".
- The counter does not function on nonrecorded (blank) sections of the tape. When you rewind, fast forward or play tapes through blank sections, the counter stops.

Video index search system

This function enables you to locate the beginning of any recording made on the VCR.

Recording an INDEX mark
The Index Search function automatically records an INDEX mark on the tape whenever a recording is initiated.

Index search
Press **INDEX +** or **–** during stop or play mode.
For Succeeding programs: Press **INDEX +**.
For Preceding programs: Press **INDEX –**.
(As many as 9 index points can be accessed via this method.)
When the **INDEX +** or **–** is pressed, the unit starts searching the INDEX NO. selected and finds the portion, then playback starts automatically. To stop the Index Search, press **STOP**.



Notes:
- When you record an INDEX mark at the very beginning of the tape, the mark may not be found.
- During INDEX search, the tape may stop and begin to play at a slightly different location.
- INDEX may not function properly with old or worn out video tapes.
- INDEX marks may not be found if it is extremely close to the point where the search began.
- In recording, if you stop recording temporarily, the INDEX mark is not recorded on the tape.

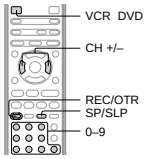
SQPB (S-VHS Quasi Playback)

You can playback video cassette tapes recorded in the S-VHS system.
However, the picture will not have the high resolution of S-VHS system.

Note: You cannot record S-VHS video format with this VCR.

Recording a TV program

Recording and viewing the same TV program.



Recording a TV program

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Load a cassette tape with the erase prevention tab intact.**
The DVD/VCR will automatically turn on.

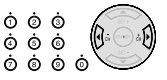
2 **Press SP/SLP to select the desired tape speed SP or SLP.**
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

SP/SLP PLAY MODE

3 **Select "TV" or "CABLE" to the appropriate position (27).**

TV	- VHF/UHF channels
CABLE	- Cable TV channels

4 **Press Number buttons or CH +/– to select the channel to be recorded.**



TV mode direct channel selection:
All channels can be instantly selected by using two buttons. (for example, to select channel 2, press "0", then "2". If you press only "2", channel selection will be delayed for two seconds.) For channels 10 and above, press the 2 digits in order.

CABLE mode direct channel selection:

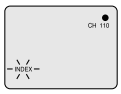
1-9	Press **0** twice and then **1-9** as required. Example: To select "2", Press **002**.
10-12	Press **0** first and then the remaining 2 digits in order from left to right. Example: Press **012** for "12".
13-99	Press 2 digits in order. Example: Press **22** for "22".
100-125	Press the 3 digits in order. Example: Press **110** for "110".

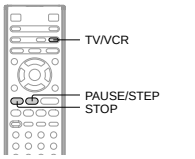
VHF/UHF/CABLE TV CHANNELS

TV	CABLE TV
VHF 2-13	VHF 2-13
UHF 14-69	STD/HRC/IRC 14-36 (A) (W) 37-59 (AA) (WW) 60-85 (AAA) (ZZZ) 86-94 (86) (94) 95-99 (A-5) (A-1) 100-125 (100)(125) 01 (5A)

5 **Press REC/OTR.**
" ● " will appear on the screen for about 4 seconds and "REC" will appear on the display window.

REC/OTR





To stop recording

Press STOP to stop recording.
" ■ " will appear on screen for about 4 seconds.

STOP

■ Auto Rewind feature
This VCR will automatically rewind the tape when the tape has ended (except during OTR and timer recording). It will also eject the tape.

To stop recording temporarily

Press PAUSE/STEP to avoid recording unwanted material. Press again to continue the recording.
" ●II " will appear on screen for about 4 seconds.

PAUSE/STEP

Notes:
- The pause function will be released after 5 minutes to prevent damage to the tape or the VCR. The VCR will change to the STOP mode.
- You can select a recording channel in the recording pause mode.

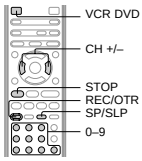
Recording one program while watching another

While the VCR is recording, select your desired channel on the TV.
When a TV is connected with an antenna cable only, press **TV/VCR** to select the TV position.
The "VCR" display will go off and recording will continue.
Select the TV channel you want to watch by using the TV channel selector.

Note:
Some Cable TV hookups do not permit viewing one channel while recording another. See pages (16) and (17).

One-touch Timer Recording (OTR)

The One-touch Timer Recording feature provides a simple and convenient way to make a timed recording.



One-touch Timer Recording (OTR)

Preparation:

- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

Example: One-touch Timer Recording for 30 minutes.

1 Load a cassette tape with the erase prevention tab intact.

The VCR will automatically turn on.

2 Press SP/SLP to select the desired tape speed SP or SLP.

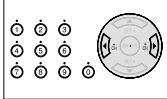
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

SP/SLP
PLAY MODE

3 Set "TV" or "CABLE" option to the appropriate position 27.

TV	- VHF/UHF channels
CABLE	- Cable TV channels

4 Press Direct channel selection buttons (0–9) or CH +/– to select the channel to be recorded.

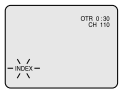


5 Press REC/OTR. Recording begins. Press the button again to stop recording after 30 minutes. Each additional press of REC/OTR will increase recording time as shown in the chart below, up to a maximum of 6 hours.

The OTR and recording time will appear on the screen for about 4 seconds. And, "●" will appear on the display.

Press	Recording time	Press	Recording time
once	NORMAL REC	6 times	3:00
twice	0:30	7 times	4:00
3 times	1:00	8 times	5:00
4 times	1:30	9 times	6:00
5 times	2:00	10 times	NORMAL REC

REC/OTR



To cancel OTR

Press **STOP** or turn off the power.

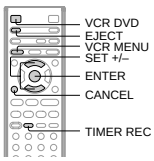
STOP

"■" will appear on screen for about 4 seconds.

Note:
If you wish to watch the DVD playback during OTR or standard recording, press **VCR DVD** selector to change to DVD mode and perform the DVD playback 42.

Timer recording

Timer recording can be programmed on-screen with the remote control. The built-in timer allows automatic unattended recording of up to 8 programs within 1 month.



Timer recording

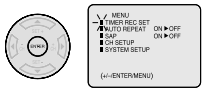
Preparation:

- Press **VCR DVD** selector to select the VCR mode.
- Load a cassette tape with the erase prevention tab intact.
- Check the time and date are correct 24.

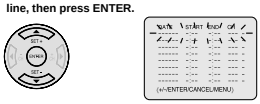
Example: Program a timer recording for the 26th day, channel 125 (Cable TV), 11:00 - 11:30 PM on timer program number 1 (Tape speed: SLP).

1 Press VCR MENU. Select "TIMER REC SET", then press ENTER.

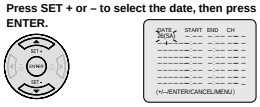
VCR MENU
SETUP



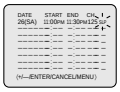
2 Press SET + or – to select one of the program line, then press ENTER.



3 Press SET + or – to select the date, then press ENTER.



4 Set the start time, end time, channel and tape speed as in step 3.



Notes:

- Press **CANCEL** to move cursor backward for correction.
- To record from external source set the channel to "L1" or "L2".

5 To enter other programs, repeat step 2 through 4.

VCR MENU
SETUP

- To return to the normal screen, press **VCR MENU** twice.

6 Press TIMER REC. The timer symbol (⏲) will appear on the display and the VCR stands by for recording.

TIMER REC

At the same time, VCR mode will change to DVD mode automatically. You can use DVD even if the VCR is in the timer recording mode.
If you do not use the DVD, turn the power off.

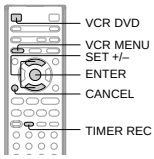
Notes:

- The timer recording will start at 5 seconds before the time you predetermined.
- If the timer symbol (⏲) does not appear on the display in spite of the pressing of **TIMER REC**, the cassette may not have been loaded 29.
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed 29.

Notes:

- If the timer symbol (⏲) blinks when the timer recording ended, the TV program has not been completely recorded because of an insufficient tape length. Press **TIMER REC** to cancel the timer program or press **EJECT** to remove the cassette tape.
- During timer recording standby mode, the VCR mode cannot be operated. To use the VCR, press **TIMER REC** at first, then press **VCR DVD** selector to change to VCR mode. After you use the VCR, press **TIMER REC** again to put the VCR into timer recording standby mode.
- If you press **TIMER REC** during timer recording, the recording operation will be interrupted. If you press **TIMER REC** again within the programmed time, the recording operation will start again.
- After a power failure or disconnection of the power plug, all programmed recording settings and time display will be lost upon resumption of power. In this case, reset the clock 24 and reprogram any timer recording.

Timer recording (Continued)



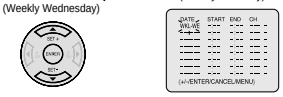
To set daily/weekly timer

Weekly (e.g. WKL-TU: each Tuesday) or daily (e.g. MO-SA: Monday to Saturday) Timer recording

Follow the procedure of timer recording on the previous page. At step **3** press **SET +** or **–** repeatedly until the desired setting appears. Then press **ENTER**.

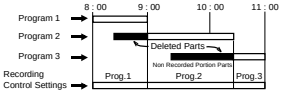
When you press **SET –** repeatedly, the DATE indicator will change as follows, in this case the day is Friday.

The current day (Friday) → SU-SA (Sunday to Saturday)
↑ SU-SA (Sunday to Saturday) ↓
One month later minus one day ↑ MO-SA (Monday to Saturday) ↓
MO-FR (Monday to Friday) ↓
WKL-WE (Weekly Wednesday) ← WKL-TH (Weekly Thursday)



If the programs overlap another

Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.



Notes:

- The daily/weekly recording can be made continuously until the recording is canceled or the tape reaches the end.
- During timer recording the automatic rewinding mechanism does not function.

To confirm or cancel a program

1 If the Timer has been activated, press TIMER REC to deactivate the Timer.

The timer symbol (⏲) will disappear. Then press **VCR DVD** selector to change to VCR mode.

TIMER REC

VCR
DVD

2 To confirm Timer program:

At step **1** on the previous page select "TIMER REC SET" and press **ENTER**.
The timer program list will appear on the screen.

3 To cancel Timer program:

Press **SET +** or **–** to select the unwanted program, then press **CANCEL** to cancel the program.

CANCEL
CLEAR

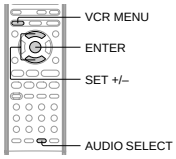
4 Press VCR MENU repeatedly until the menu screen is cleared.

VCR MENU
SETUP

Notes:

- If there are other timer record programs remaining, **TIMER REC** must be pressed to reactivate the timer, otherwise the remaining timer record programs will be ignored.
- You cannot confirm the Timer program during timer recording operation.
- You can correct or cancel a programmed setting in program confirm mode.

Stereo recording and playback / Second Audio Program (SAP)



Stereo recording and playback

The VHS Hi-Fi audio system permits high fidelity recording of MTS STEREO TV broadcasts.

When a MTS STEREO broadcast is received, "STEREO" will appear on the screen for about 4 seconds and the program can be viewed or recorded in stereo. The Hi-Fi stereo recording procedure is the same as for normal recordings.

Note:
When using a Cable TV system, stereo TV programs may be transmitted over a mono cable channel. In this case "STEREO" will not appear and the sound will be in mono.

AUDIO SELECT
AUDIO

Output selection
When viewing an MTS stereo TV program, or playing a prerecorded VHS Hi-Fi stereo videotape, press **AUDIO SELECT** to select how the audio will be heard through the speakers. Normally set to the Hi-Fi stereo position, this button can be set to the MONO position if the stereo broadcast or videotape audio is of poor quality. The "R" and "L" positions allow the audio from the Right or Left Hi-Fi channel to be heard over both TV speakers. This button has no effect when viewing a MONO videotape or TV program. Each time when you press the button, OUTPUT SELECTION display appears on the screen for several seconds. Refer to the chart below.

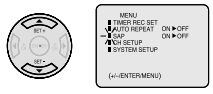
OUTPUT SELECTION	SOUND HEARD ON BOTH SPEAKERS
STEREO	STEREO
L ch	LEFT CHANNEL AUDIO
R ch	RIGHT CHANNEL AUDIO
MONO	MONO

Second Audio Program (SAP)

Your DVD/VCR is fitted with a SAP broadcast system which enables you to switch to a second audio program when viewing a selected channel.
This function applies only when the program is broadcast in multi-languages through the SAP broadcast system.

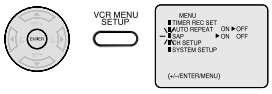
1 Press VCR MENU. Then press SET + or – to select "SAP".

VCR MENU
SETUP



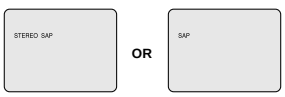
2 Press ENTER to select "ON".

Then press **VCR MENU** until the menu screen is cleared.



Listening to SAP

When the VCR is turned on or a channel selection is made, make certain the letters "SAP" appears on the screen for about 4 seconds. This means that the "Second Audio Program" broadcasting is available.

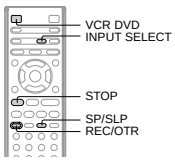


Notes:

- When playing back a tape that is not recorded in Hi-Fi stereo mode, the audio will automatically be monaural.
- When listening to a VHS Hi-Fi video tape or MTS broadcast through the VHF/UHF jack (Audio/Video cable not connected), the sound will be monaural.

Duplicating a video tape

If you connect the DVD/VCR to another VCR or Camcorder, you can duplicate a previously recorded tape. Make all connections before turning on the power.



Duplicating a video tape

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a previously recorded tape into the playback VCR or Camcorder.

1 Press SP/SLP to select the desired tape speed SP or SLP.

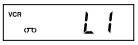
SP/SLP PLAY MODE

It is recommended that you set the tape speed to the SP mode on the recording VCR for best results.

2 Press INPUT SELECT once or twice to select AUDIO/VIDEO input position.

"L1" or "L2" will appear in the display.

INPUT SELECT



L1: on the rear panel
L2: on the front panel

3 Press PLAY on the playback VCR or Camcorder.

4 Press REC/OTR on the recording VCR.

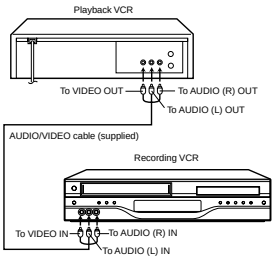
REC/OTR

The duplicating process begins.

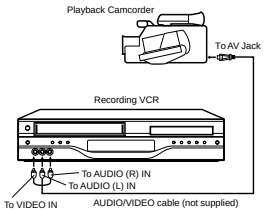
5 Press STOP after duplicating a video tape.

STOP

Connection with second VCR



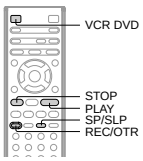
Connection with Camcorder



For duplicating a previously recorded tape from a camcorder, follow the camcorder manufacturer's instructions. A typical camcorder dubbing hookup is shown above.

Recording a DVD/CD disc

You can record disc material in DVD, Audio CD, etc. onto a Video tape with this DVD/VCR.



Duplicating a DVD or CD disc

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a DVD/CD disc.

1 Press SP/SLP to select the desired tape speed SP or SLP.

SP/SLP PLAY MODE

2 Press VCR DVD selector to select the DVD mode.

The DVD indicator will light.

VCR DVD

DVD

3 Press PLAY to start playback.

PLAY

4 Press REC/OTR to start recording.

REC/OTR

The DVD/VCR will change to the VCR mode automatically and the playback picture or sound will be duplicated on the video cassette tape.

5 Press STOP if you finish recording.

STOP

If you wish to stop a DVD/CD disc, press **VCR DVD** selector to change the DVD mode, then press **STOP**.

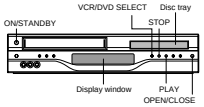
Notes:
- You may not be able to record the beginning of the disc. Begin VCR recording once program playback commences on the DVD.
- When the scanning mode is set to the progressive mode, you cannot duplicate a disc material onto a video tape. When **REC/OTR** is pressed, the PROGRESSIVE indicator "P" on the display window will flash and "Please Set P Off" will appear on the screen.
- You cannot record discs encoded with copy guard function. The following icon and text will show up on the TV screen.

DISC IS COPY PROTECTED

Playing a disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



Basic playback

Preparations:
- When you want to view a disc, turn on the TV and select the corresponding video input connected to the DVD. This may include S-video or component video inputs which are exclusive to DVD playback.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD/VCR.

1 Press ON/STANDBY.

I/⏻ ON/STANDBY

The DVD/VCR turns on.

2 Press VCR/DVD SELECT to select the DVD mode.

VCR/DVD SELECT

The DVD indicator will light.

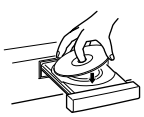
DVD

3 Press OPEN/CLOSE.

⏏OPEN/CLOSE

The disc tray opens.

4 Place the disc on the disc tray.



With the playback side down

- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD/VCR to malfunction.
- Do not place a disc which is unplayable in this DVD/VCR.

5 Press OPEN/CLOSE or PLAY on the unit.

⏏OPEN/CLOSE OR ►PLAY

The disc tray closes automatically. On the TV-screen, "⏏" changes to "Reading" and then playback commences.

- A menu screen will appear on the TV screen, if the disc has a menu feature.

6 Press ▲/▼ or ◄/► to select title.

7 Press ENTER.

- Title is selected and play commences.

8 Press STOP to end playback.

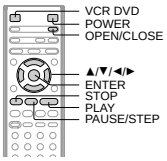
■STOP

- The unit records the stopped point, depending on the disc. "▶▮" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc ("■" appears on the screen.), the unit will clear the stopped point.

■ To start playback in the stop mode

Press **PLAY**.

►PLAY



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this unit, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCD CD

The DVD VCD CD icons on the heading bar show the playable discs for the function described under that heading.
DVD : You can use this function with DVD video discs.
VCD : You can use this function with Video CDs.
CD : You can use this function with Audio CDs and CD-R/RW CDs.

■ To pause playback (still mode)

Press **PAUSE/STEP** during playback.

PAUSE/STEP

To resume normal playback, press **PLAY**.

- The sound is muted during still mode.

■ To stop playback

Press **STOP**.

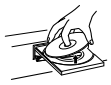
STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE

Remove the disc after the disc tray opens completely.



Be sure to press **OPEN/CLOSE** to close the disc tray after you remove the disc.

■ Playing a Disc while the VCR section is recording or standing by for timer recording

1) Start to record.
Follow steps 1~5 on page 34.
• If the DVD/VCR is standing by for recording, turn on the DVD/VCR.
2) Press **VCR DVD** selector to select DVD mode.
3) Play a disc.
Follow steps 3 ~ 5 on page 42.
• Press **PLAY** if the DVD/VCR does not start to play a disc automatically.
4) Stop to play.
Press **STOP** to stop play back a disc.

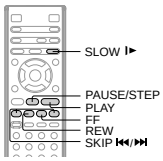
■ Screen saver function

The screen saver operates when you leave the unit in DVD stop mode for approx. five minutes.
The screen will repeatedly get dark gradually and back to normal.

Notes:
- If a non-compatible disc is loaded, "Incorrect Disc", "Region Code Error" or "Parental Error" will appear on the TV screen according to the type of loaded disc. In this case, check your disc again 8 59.
- Some discs may take a minute or so to start playback.
- When you set a single-faced disc label downwards (i.e. the wrong way up) and press **OPEN/CLOSE** or **PLAY** on the unit, "Reading" will appear on the display for a few minutes and then "Incorrect Disc" will continue to be displayed.
- Some discs may not work the resuming facility.
- Resuming cannot function when you play a PBC-featured Video CD while the PBC is on. To turn off the PBC, see page 51.
- Some playback operations of DVDs may be intentionally fixed by software producers. Since this unit plays DVDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs.
- Do not move the unit during playback. Doing so may damage the disc.
- Use the **OPEN/CLOSE** to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the unit to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the unit to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press **POWER** on your remote control once the movie is completed.
- There may be a slight delay between you pressing the button and the function activating.

Playing a disc (Continued)

You can play discs at various speeds.



Playing in fast reverse or fast forward directions

Press REW or FF during playback.

REW ◄◄ FF ►►

REW: Fast reverse playback
FF: Fast forward playback

Each time you press **REW** or **FF**, the playback speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY ►

Notes:
- The DVD/VCR mutes sound and subtitles during reverse and forward scan of DVD/VCD video discs. However, this unit plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STEP during still playback.

PAUSE/STEP ❚❚/❚❚►

Each time you press **PAUSE/STEP**, the picture advances one frame.

■ **To resume normal playback**
Press **PLAY**.

PLAY ►

Note:
The sound is muted during frame by frame playback.

Playing in slow-motion

Press SLOW (I►) during playback.

SLOW I►

Each time you press the button, the slow-motion speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY ►

Note:
The sound is muted during slow-motion playback.

Locating a chapter or track

Press SKIP I◄◄ or ►►I repeatedly to display the chapter or track number you want.

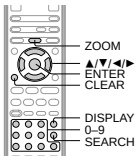
Playback starts from the selected chapter or track.

+INDEX SKIP ►►I — To locate succeeding chapters or tracks.

-INDEX SKIP I◄◄ — Playback starts from the beginning of the current chapter or track. When you press twice in quick successions, playback starts from the beginning of the preceding chapter or track.

Notes:
- A "Prohibition" symbol may appear at the upper left of the screen. This symbol means either the feature you tried is not available on the disc, or the DVD/VCR cannot access the feature at this time. This does not indicate a problem with the DVD/VCR.
- The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

Zooming/Locating desired scene



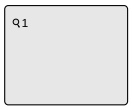
Zooming

This unit will allow you to zoom in on the frame image. You can then make selections by switching the position of the frame.

1 Press ZOOM during playback.

CM SKIP ZOOM

The center part of the image will be zoomed in.
Each press of **ZOOM** will change the ZOOM 🔍1 (x 1.3), 🔍2 (x 1.5) and 🔍3 (x 2.0).



2 Press ▲/▼/◄/► to view a different part of the frame.

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 In the zoom mode press ZOOM repeatedly to return to a 1:1 view (🔍 Off).

CM SKIP ZOOM

Notes:
- You can select the Pause, Slow or Search playback in the zoom mode.
- Some discs may not respond to zoom feature.

Locating desired scene

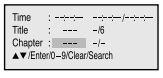
Use the title, chapter and time recorded on the DVD disc to locate the desired point to play back. In the case of VCD/CD discs, time and track are used to locate the desired point to play back. To check the title, chapter and time, press **DISPLAY**.

1 Press SEARCH during playback or stop mode.

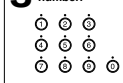
ZERO RETURN SEARCH

- "Time" only works in playback or resume stop mode.

2 Press ▲ or ▼ to select the "Time", "Title" or "Chapter".



3 Press Number buttons (0–9) to change the number.



- If you input a wrong number, press **CLEAR**.
- Refer to the package supplied with the disc to check the numbers.

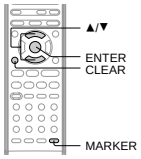
4 Press ENTER. Playback starts.

- When you change the title, playback starts from Chapter 1 of the selected title.
- Some discs may not work in the above operation.

Note:
In case of the Video-CD playback with PBC, the SEARCH does not work. To turn off PBC 51.

Marking desired scenes

The unit stores the points that you want to watch again up to 3 points.
You can resume playback from each scene.



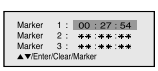
Marking the scenes

1 Press MARKER during playback.

MARKER

2 Select the blank Marker using ▲ or ▼. Then press ENTER at the desired scene.

- Repeat this procedure to set the other 2 scenes.



3 Press MARKER to remove this display.

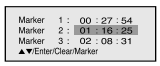
MARKER

Returning to the scenes

1 Press MARKER during playback or stop mode.

MARKER

2 Press ▲ or ▼ to select the Marker 1-3.



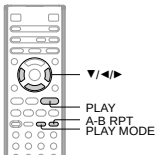
3 Press ENTER.

Playback starts from the marked scene.

■ **To cancel the Marker**
Follow the above steps 1~2, then press **CLEAR**.

Notes:
- Some discs may not work with the marking operation.
- The marking is canceled when you open the disc tray or turn the power off.
- Some subtitles recorded around the marker may fail to appear.

Repeat playback/A-B Repeat playback



Repeat playback

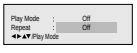
1 Press PLAY MODE during playback or stop mode.

SP/SLP PLAY MODE

2 [DVD]
Press ◄/► to select "Chapter" or "Title".

The unit automatically starts repeat playback after finishing the current title or chapter.

[Audio CD, Video CD, MP3/WMA CD]
Press ▼ to select "Repeat".
Press ◄/► to select "Track" or "All".



The unit automatically starts repeat playback after finishing the current track.

- If you set the repeat mode during stop mode, press **PLAY** to start Repeat playback.

3 Press PLAY MODE again to make the screen disappear.

■ **To resume normal playback**
Select Repeat : "Off" in step 2.

Notes:
- Some discs may not work with the repeat operation.
- In case of Video CD with PBC, repeat functions are prohibited during playback.

A-B Repeat playback

A-B repeat playback allows you to repeat material between two selected points.

1 Press A-B RPT during playback.

A-B RPT

The start point is selected.

2 Press A-B RPT again.

A-B RPT

The end point is selected. Playback starts at the point that you selected. Playback stops at the end point, returns to Point A automatically, then starts again.

■ **To resume normal playback**
Press **A-B RPT** again.

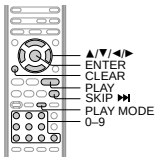
A-B RPT

"Off" appears on the screen.

Notes:
- In A-B Repeat mode, subtitles near the A or B locations may not be displayed.
- You cannot set the A-B Repeat for the scenes that include multiple angles.
- A-B Repeat playback does not work when Repeat playback is activated.
- You may not be able to set A-B Repeat, during certain scenes of the DVD.
- A-B Repeat does not work with an interactive DVD, MP3/WMA/JPEG CD.
- A-B Repeat is prohibited when PBC is on.

Program playback/Random playback

You can arrange the playback order of tracks or files on the disc. And also the unit selects tracks or files at random and playback them. These feature works for Audio CD, Video CD and MP3/WMA/JPEG CD.

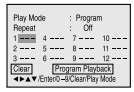


Program playback

1 **Press PLAY MODE during stop mode.**

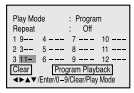
SP/SLP
PLAY MODE

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select “Program”.**



3 **Press ▲/▼ or ◄/► to select the programming position. Use Number buttons (0–9) to input the track or file numbers.**

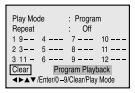
- To program others, repeat step 3.
- If you input a wrong number, press **CLEAR.**



4 **Press ▲/▼/◄/► to select “Program Playback” and press ENTER.**

The programs you selected will start to playback in the order.

- In case of JPEG file, press **SKIP ⏭** to continue the program playback.
- To resume normal playback, select Play Mode: “Off” in step 2.



■ **To change the program**
1. In the program mode, press ▲/▼/◄/► to select the track number.
2. Press **Number buttons (0–9)** to select the track number to be replaced.

■ **To clear the program one by one**
In the program mode, press ▲/▼/◄/► to select the track number. Then press **CLEAR**.

■ **To clear all the programs**
In the program mode, press ▲/▼/◄/► to select “Clear”. Then press **ENTER**.

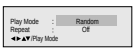
Notes:
- In playing back the Video CD with PBC, you cannot set Program playback.
- The program is cancelled when you open the disc tray or turn the power off.

Random playback

1 **Press PLAY MODE during playback or stop mode.**

SP/SLP
PLAY MODE

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select “Random”.**



3 **Press PLAY.**

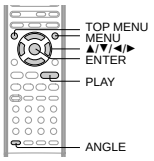
PLAY

The Random Playback will start.

- If you set “Random” during playback mode, Random playback will begin after the track that is currently being played has ended.
- To resume normal playback, select Play Mode: “Off” in step 2.

Note:
In playing back the Video CD with PBC, you cannot set Random playback.

Changing angles/Title selection/DVD menu



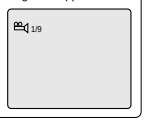
Changing angles

When playing back a disc recorded with multi-angle facility, you can change the angle that you are viewing the scene from.

1 **Press ANGLE during playback.**

The current angle will appear.

COUNTER RESET
ANGLE



2 **Press ANGLE repeatedly until the desired angle is selected.**

COUNTER RESET
ANGLE

Note:
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Title selection

Two or more titles are recorded on some discs. If the title menu is recorded on the disc, you can select the desired title.

1 **Press TOP MENU during playback.**

TOP MENU

Title menu appears on the screen.

2 **Press ▲/▼/◄/► to select the desired title.**

3 **Press ENTER or PLAY.**

The playback of the selected title will start.

PLAY

Note:
Depending on the DVD, you may not be able to select the title. Depending on the DVD, a “title menu” may simply be called a “menu” or “title” in the instructions supplied with the disc.

DVD menu

Some DVDs allow you to select the disc contents using the menu.
When you play back these DVDs, you can select the subtitle language and sound-track language, etc. using the menu.

1 **Press MENU during playback.**

MENU

The DVD menu appears on the screen.
- Press **MENU** again to resume playback at the scene when you pressed **MENU**.

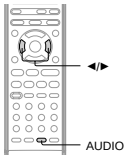
2 **Press ▲/▼/◄/► to select the desired item.**

3 **Press ENTER.**

The menu continues to another screen. Repeat steps 2 and 3 to set the item completely.

Note:
Depending on the DVD, you may not be able to resume playback from the scene point when you pressed **MENU**.

Changing soundtrack language/ Setting surround sound



Changing soundtrack language

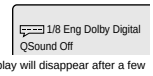
You can select the language when you play a multilingual disc.

1 **Press AUDIO during playback.**

AUDIO SELECT
AUDIO

The current soundtrack language will appear.

2 **Press AUDIO repeatedly until the desired language is selected.**



- The on screen display will disappear after a few seconds.

■ **In case of Video CD playback**

Audio type changes as follows each time you press **AUDIO**.

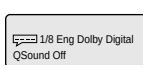
Notes:
- If the desired language is not heard after pressing the button several times, the language is not recorded on the disc.
- Changing soundtrack language is cancelled when you open the disc tray. The initial default language or available language will be heard if the disc is played back again.

Setting surround sound

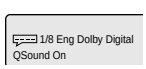
This DVD video player equipped with a “QSound”. It can produce the effect of being in a cinema or a concert hall.

1 **During disc playback press AUDIO.**

AUDIO SELECT
AUDIO



2 **Press ◄ or ► to select “On”.**



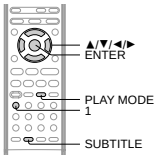
- The on screen display will disappear after a few seconds.

■ **To cancel Surround mode**:
Follow the left steps 1–2, then press ◄ or ► to select the “Off” position.

Notes:
- The “QSound” is effective only for the sound of disc.
- The QSound setting can also be changed in the function setting 58.

QSOUND®
Manufactured under license from QSound Labs, Inc. U.S. patent Nos. 5,105,462, 5,208,860 and 5,440,638 and various foreign counterpart. Copyright QSound Labs, Inc. 1998-2002. QXpander™ is a trademark of QSound Labs, Inc. All rights reserved.

Subtitles/To turn off the PBC

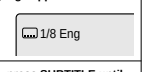


Subtitles

When playing back a disc recorded with subtitles, you can select the subtitle language or turn the subtitle off.

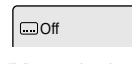
1 **Press SUBTITLE repeatedly during playback until your desired language appears.**

ATR
SUBTITLE



2 **To turn off the subtitle, press SUBTITLE until “Off” appears.**

ATR
SUBTITLE



- The on screen display will disappear after a few seconds.

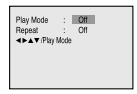
Notes:
- Depending on the DVD, you may not be able to change subtitles, or to turn subtitles on or off.
- While playing a DVD, the subtitle may change when you open or close the disc tray.
- In some cases, a selected subtitle language may not be changed immediately.

To turn off the PBC

1 **Press PLAY MODE in the stop mode.**

SP/SLP
PLAY MODE

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select “Off”.**



3 **Press PLAY MODE again to make the screen disappear.**

■ **To turn on the PBC**

Follow the above steps 1–2, then press ◄ or ► to select “PBC”.

Note:
You can also turn off the PBC by pressing number button **1** and **ENTER** in the stop mode.

MP3/WMA/JPEG operation

This player can play back the MP3/WMA/JPEG-data which has been recorded on CD-R or CD-RW. To produce the MP3/WMA JPEG-data, you need a Windows-PC with CD-RW drive and a MP3/WMA/JPEG-encoding Software (not supplied).
The Apple-HFS-System cannot be played.

Note:
This unit requires discs/recordings to meet certain technical standards in order to achieve optimal playback quality. Pre-recorded DVDs are automatically set to these standards. There are many different types of recordable disc formats (including CD-R containing MP3/WMA files). Given the fact that technology in this area is still maturing, Toshiba cannot guarantee that all genre of recordable discs will produce optimal playback quality. The technical criteria set out in this owner's manual are meant as a guide only.
Please be advised that you must obtain permission from the applicable copyright owners to download copyrighted content, including music files, in any format, including the MP3 and WMA formats, prior to the downloading thereof. Toshiba has no right to grant and does not grant permission to download any copyrighted content.

MP3/WMA/JPEG CD information

Limitations on MP3/WMA/JPEG CD playback
- MP3/WMA/JPEG CD is the disc that is standardized by ISO9660, its file name must include 3-digits extension letters, "mp3", "wma", "jpg".
- MP3/WMA/JPEG CD must be correspond to the ISO standardized files.
- This unit can read 600 files per disc. If one directory has more than 600 files, it reads up to 600 files, the remaining files will be omitted.
- The unit is able to recognize up to a maximum of 50 directories per disc.
- MP3/WMA/JPEG CDs cannot be used for the purpose of recording.
- If the CD has both audio tracks and MP3/WMA/JPEG files, only audio tracks are played.
- It may take more than one minute for this unit to read MP3/WMA/JPEG files depending on its structure.
- Music recorded by "Joliet Recording Specification" can be played back, the file name is displayed (within 16 letters) on the screen. Long file names will be condensed.
- The music files recorded by "Hierarchical File System" (HFS) cannot be played.

Limitations on display
- The maximum number for display is 16 letters.
  Available letters for display are the following:
  capital or small alphabets of A through Z, numbers of 0 through 9, and _ (under score).
- Other letters than those above are replaced in hyphen.

Notes on MP3/WMA/JPEG files
To play back MP3/WMA/JPEG CD in the recorded order,
1. Use MP3/WMA/JPEG software that records data alphabetically or numerically.
2. Name each file including two-digit or three-digit number (ex. "01" "02" or "001" "002").
3. Refrain from making too many sub-folders.

CAUTION:
- Some MP3/WMA/JPEG CDs cannot be played back depending on the recording conditions.
- The CD-R/RW that has no music data or non MP3/WMA/JPEG files cannot be played back.

Standard, sampling frequency, and the bit rate:
MP3 CD
MPEG-1 Audio
32kHz, 44.1kHz, 48kHz
32kbps ~ 320kbps (constant bit rate or variable bit rate)
The recommend recording setting for a high-quality sound is 44.1kHz of sampling frequency and 128kbps of constant bit rate.
WMA CD
WMA version 7, and 8
32kHz, 48kbps
44.1kHz, 48kbps ~ 192kbps
48kHz, 128kbps ~ 192kbps
The file recorded by mono, 48kHz, 48 kbps is not available to this unit.

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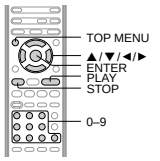
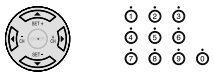


MP3/WMA CD playback

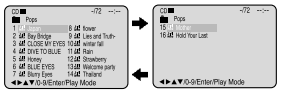
1 **Place a disc on which MP3 or WMA files have been recorded onto the disc tray.**

2 **A file menu screen will appear on the screen. Press ◄/► or ENTER to select folder.**

3 **Press ▲/▼/◄/► or Number buttons (0–9) to select the desired file.**



- In case the folder includes more than 15 files, press ◄ or ► to display next file list.



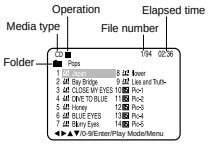
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed using **PLAY**, playback begins automatically starting from the first file. In this case, if the first file is an MP3/WMA file, only MP3/WMA files are played back in order. If the first file is a JPEG file, the first JPEG file is played back.

4 **Press ENTER.**
The selected file starts playing back.

5 **Press STOP to end playback.**

- The unit records the stopped point. "▮◤" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc, the unit will clear the stopped point.

About file menu

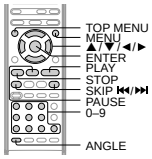


: Indicates MP3-file
: Indicates WMA-file
: Indicates JPEG-file

Notes:
- The picture menu is displayed when the FUJICOLOR CD or the Kodak Picture CD are played. To display the file menu, press **TOP MENU**.
- In the case of a CD containing a mixture of MP3, WMA and JPEG files, the files are played back by selecting them from the file menu.
- MP3 or WMA file on the Kodak Picture CD is not recognized on this unit.

Notes:
- During MP3/WMA/JPEG-Playback, you cannot use SEARCH, A-B Repeat functions.
- You can use Repeat (Track or All), Random functions and Program playback for MP3/WMA/JPEG CD Playback 47 48.

MP3/WMA/JPEG operation (Continued)

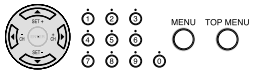


JPEG CD playback

1 **Place a disc on which JPEG files have been recorded onto the tray.**

2 **A file menu screen will appear on the screen. Press ◄/► to select folder.**

3 **Press ▲/▼/◄/► or Number buttons (0–9) to select the desired file.**
To display a picture menu, press **MENU**.
(To return to a file menu, press **TOP MENU**.)
Press ◄/► or ▲/▼ to select the desired file.



- To display next list, press **SKIP ⏮/⏭**.
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed after pressing **PLAY**, playback begins automatically starting from the first file. In this case, if the first file is a JPEG file, the first JPEG file is played back. If the first file is an MP3/WMA file, only MP3/WMA files are played back in order.

4 **Press ENTER. The selected picture appears on the screen.**

Rotating an image
You can rotate an image by 90 degrees by pressing **ANGLE** during playback of the image.
"🔄", "🔄", "🔄" or "🔄" appears briefly on the screen.

5 **Press STOP to end playback.**
The file menu appears on the screen.
If you want to watch the other file, repeat steps 3 ~ 4.

Slide show playback

The slide show enables you to view pictures (files) one after another automatically.

Preparation:
Set "JPEG Interval" setting to "5 Seconds", "10 Seconds" or "15 Seconds" 58.

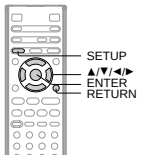
1 **Select your desired starting file for the slide show in the step 3 as left.**

2 **Press ENTER to start slide show from the selected file.**

- If you press **PAUSE** during the slide show, the slide show stops temporary. " ❚❚ " appears briefly on the picture.
  If the picture appears upside down or sideways, press **ANGLE** repeatedly until it's right side up.
  "🔄", "🔄", "🔄" or "🔄" appears briefly on the screen.
  Press **PLAY** or **SKIP ⏭** again to resume the slide show.
- When the slide show playback finished the file list appears.
- To stop the slide show, press **STOP**. The file list appears.

Customizing the function settings

You can change the default settings to customize performance to your preference.



Setting procedure

1 **Press SETUP during stop mode.**

The following on-screen display appears.

2 **Press ◄ or ► to select the desired section, then press ▼ or ENTER.**

3 **Press ▲ or ▼ to select the desired option.**

4 **Change the selection using ◄ or ►, by referring to the corresponding pages 57~59.**

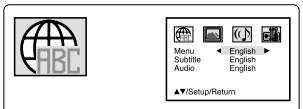
- Repeat steps 3 and 4 to change other settings.
- To select another operation, go back to step 2 by pressing ▲ repeatedly.

5 **To make SETUP screen disappear, press SETUP or RETURN.**

Customizing the function settings (Continued)

Setting details

Section	Option	Details	Page
	Menu **Subtitle** **Audio**	To select the language of "Menu", "Subtitle" and "Audio" if more than one language are available on the disc.	57
	E.B.L.	To select On or Off for E.B.L. (Enhanced Black Level).	57
	Tv Screen	To select a picture size according to the aspect ratio of your TV.	57
	Display	To turn on or de-activate the operational status display on the screen.	57
	Picture Mode	To select a preferred picture mode from "Video", "Film" or "Auto".	58
	JPEG Interval	To select a preferred setting for the slide show playback.	58
	Dialogue	To select On or Off for DRC (Dynamic Range Control).	58
	QSound	To select On or Off for QSound.	58
	Password	Input 4-digit password to set the parental level.	59
	Parental	To select a preferred parental level for the parental setting.	
	Select Files	To select a preferred file type for playing back a CD containing a mixture of file types.	
	Output	To select a preferred video output signal from "Progressive" or "Interlace".	



■ **Menu, Subtitle, Audio**

You can select the language of "Menu", "Subtitle" and "Audio" if more than one languages are recorded onto the disc.

English, Francais, Espanol:
The selected language will be heard or seen.

Other:
Other language can be selected (see the "Language code list" 61).

Original: (Audio)
The unit will select the first priority language of each disc.

Off: (Subtitle)
Subtitles do not appear.

Notes:
- If the selected language is not recorded on the disc, the first-priority language is selected.
- If you want to change the OSD language, you can perform it by TV MENU 23.

■ **E.B.L.**

To select the black level of playback pictures, set your preference and monitor's ability.

On: Enhanced grey scale (0 IRE cut off)
Off: Standard grey scale (7.5 IRE cut off)

■ **Tv Screen**

You have the following screen sizes to choose from:

4:3 ▭ (Letter box):
Select this mode when connecting to a conventional TV. When playing back a wide screen-DVD disc, it displays the wide picture with black bands at the top and bottom of screen.

4:3 ▭ (Pan scan):
It displays the wide picture on the whole screen with left and right edges automatically cut off.

16:9 ▭ (Wide):
Select this mode when connecting to a wide-screen TV. A wide screen picture is displayed full size.

Press **OPEN/CLOSE** to view in the selected screen size.

Note:
If the DVD disc is not formatted in the pan & scan style, it displays 4:3 style.

■ **Display**

On screen display can be switched on or off when you press the buttons.

On: On screen displays appear when you press the buttons (factory setting).
Off: On screen displays do not appear when you press any buttons.

Customizing the function settings (Continued)

Setting details

■ **Picture Mode**

There are two types of source content in pictures recorded in DVD video discs: film content (pictures recorded from films at 24 frames per second) and video content (video signals recorded at 30 frames per second). Make this selection according to the type of content being viewed.

Auto: Select this position normally. The DVD player automatically detects source content, film or video, of playback source, and converts that signal in the progressive output format in an appropriate method.

Film: The DVD player converts film content pictures in the progressive output format appropriately. Suitable for playback of film content pictures. The progressive output feature will be most effective under this selection.

Video: The DVD player filters video signal, and converts it in the progressive output format appropriately. Suitable for playback of video content pictures.

Note:
Depending on the disc, pictures may be cut off or doubled. In this case, select "Video".

■ **JPEG Interval**

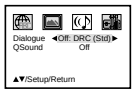
You can continuously play back all JPEG files automatically.
After the setting below, start playing the disc on which JPEG files have been recorded.

Off:
Plays back one file at a time.

5 Seconds:
Plays back images in the form of a slide show at 5 second intervals.

10 Seconds:
Plays back images in the form of a slide show at 10 second intervals.

15 Seconds:
Plays back images in the form of a slide show in 15 second intervals.



■ **Dialogue**

DRC (Dynamic Range Control) enables you to control the dynamic range so as to achieve a suitable sound for your equipment.

On: DRC (TV):
Loud sound such as explosion or similar is toned down slightly when played back. This makes it suitable for when it is connected to a stereo.
Off: DRC (Std):
It plays back at the recording level on the disc.

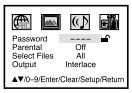
Notes:
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on DVD video disc.

■ **QSound**

This DVD video player equipped with a "QSound". It can produce the effect of being in a cinema or a concert hall.

On: The QSound operates.
Off: The QSound is disengaged.

Note:
The QSound setting can also be changed with **AUDIO** on the remote control 50.



■ **Parental control setting**

Some discs are specified not suitable for children. Such discs can be limited not to play back with the unit.

1) Press ▲ or ▼ to select "Parental", then press ◄ or ► until the level you require appears.
   - **Level Off**: The parental control setting does not function.
   - **Level 8**: All DVD software can be played back.
   - **Level 1**: DVD software for adults cannot be played back.

   Select from the level 1 to level 8. The limitation will be more severe as the level number is lower.
2) Press ▲ or ▼ to select "Password".
   Press **Number buttons (0–9)** to input a 4-digit password. Be sure to remember this number!
   • If you input a wrong number, press **CLEAR**.
3) Press **ENTER** to store the password.
   Note: Now the rating is locked and the setting cannot be changed unless you enter the correct password.
4) Press **OPEN/CLOSE** to activate Parental control setting. (See "Temporary disabling of rating level by DVD disc" 60.)

Notes:
- Depending on the discs, the unit cannot limit playback.
- Some discs may not be encoded with specific rating level information though its disc jacket says "adult." For those discs, the age restriction will not work.

■ **To change the parental level**

1) Press ▲ or ▼ to select "Password".
2) Press **Number buttons (0–9)** to enter the password you have stored.
3) Press **ENTER**.
   • The rating is now unlocked.
4) Press ▲ or ▼ to select "Parental", then press ◄ or ► to change the parental level.
5) Press ▲ or ▼ to select "Password", then press **Number buttons (0–9)** to enter the password.
   Note: You can change the password if you want.
6) Press **ENTER**.
   Now the parental level is changed and locked.

If you forget the password...
1. Press **OPEN/CLOSE** to open the disc tray.
2. Remove the disc.
3. Press **OPEN/CLOSE** again to close the disc tray. "No Disc" appears on the screen.
4. While holding **7** down on the remote control and then press **STOP** on the front panel. "PASSWORD CLEAR" appears on the screen.
5. Enter a new password again.

■ **Select Files**

When playing back a CD containing a mixture of MP3, WMA and JPEG files, only MP3/WMA or JPEG files can be displayed on the file menu.

All:
Displays all files.
Music Only:
Displays only MP3/WMA files.
Pictures Only:
Displays only JPEG files.

■ **Output**

You can select the video output signal of the DVD video player to the TV from "Interlace" or "Progressive".

1) Press ▲ or ▼ to select "Output".
2) Press ►, then press ▲ or ▼ to select "Interlace" or "Progressive".
   Interlace:
   Select when connecting to a composite TV or a TV equipped with component video inputs but progressive scan is not compatible.
   Progressive:
   Select when connecting to a TV equipped with component video inputs, progressive scan compatible.
3) Press **ENTER**.

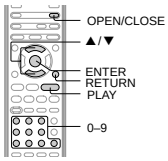
Warning:
Once "Progressive" is selected when connecting to a TV progressive scan incompatible, no image will be seen on the video display.
In this case, you must reset the unit by pressing **STOP** on the front panel for five seconds. The video output will be restored to "Interlace" setting, and a picture will once again be seen on a conventional analog display.

Notes:
- Some discs may not be played back with the progressive scanning mode correctly because of the disc characteristics or recording condition.
- Once Progressive scan on, all other video outputs are disabled except component video outputs.

Note:
If each setup (pages 57–59) has been completed, the unit can always be worked under the same conditions (especially with DVD discs).
Each setup will be retained in the memory even if you turn the power off.

Temporary disabling of rating level by DVD disc

Depending on the DVD disc, the disc may try to temporarily cancel the rating level that you have set.
It is up to you to decide whether to cancel the rating level or not.



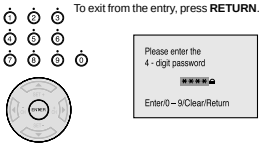
1 **Load a DVD disc and press PLAY or OPEN/CLOSE on the unit (42).**

2 **If the DVD disc has been designed to temporarily cancel the Rating level, the screen which follows the "Reading" screen will change, depending on which disc is played. If you select "YES" with the ENTER key, "Your disc exceeds the parental control level#." screen will then appear.**

3 **If you wish to cancel the set rating level temporarily, select "Parental Control Level" with ▲ or ▼, then press ENTER. If the 4-digit password at step 2 on page 59 has been set, the password entering screen will appear as shown in step 4.**
Alternatively, if the password has not been set, playback will commence. If you don't know (or have forgotten) the password, select "Cancel Picture". The setting screen will disappear. Press OPEN/CLOSE to remove the disc.

4 **Enter the password with Number buttons (0–9). Then press ENTER.**

To exit from the entry, press **RETURN**.



5 **Playback will commence if the entered password was correct.**

Note:
This temporary cancellation of rating level will be kept until the disc is ejected.
When the disc is ejected, the original rating level will be set again automatically.

Language code list

Enter the appropriate code number for the initial settings "Menu", "Subtitle" and/or "Audio" (57).

Language Name	Code	Language Name	Code	Language Name	Code	Language Name	Code
Abkhazian	1112	Fiji	1620	Lingala	2224	Singhalese	2919
Afar	1111	Finnish	1619	Lithuanian	2230	Slovak	2921
Afrikaans	1116	French	1628	Macedonian	2321	Slovenian	2922
Albanian	2927	Frisian	1635	Malagasy	2317	Somali	2925
Amharic	1123	Galician	1722	Malay	2329	Spanish	1529
Arabic	1128	Georgian	2111	Malayalam	2322	Sundanese	2931
Armenian	1835	German	1415	Maltese	2330	Swahili	2933
Assamese	1129	Greek	1522	Maori	2319	Swedish	2932
Aymara	1135	Greenlandic	2122	Marathi	2328	Tagalog	3022
Azerbaijani	1136	Guarani	1724	Moldavian	2325	Tajik	3017
Bashkir	1211	Gujarati	1731	Mongolian	2324	Tamil	3011
Basque	1531	Hausa	1811	Nauru	2411	Tatar	3030
Bengali; Bangla	1224	Hebrew	1933	Nepali	2415	Telugu	3015
Bhutani	1436	Hindi	1819	Norwegian	2425	Thai	3018
Bihari	1218	Hungarian	1831	Oriya	2528	Tibetan	1225
Breton	1228	Icelandic	1929	Panjabi	2611	Tigrinya	3019
Bulgarian	1217	Indonesian	1924	Pashto, Pushto	2629	Tonga	3025
Burmese	2335	Interlingua	1911	Persian	1611	Turkish	3028
Byelorussian	1215	Irish	1711	Polish	2622	Turkmen	3021
Cambodian	2123	Italian	1930	Portuguese	2630	Twi	3033
Catalan	1311	Japanese	2011	Quechua	2731	Ukrainian	3121
Chinese	3618	Javanese	2033	Rhaeto-Romance	2823	Urdu	3128
Corsican	1325	Kannada	2124	Romanian	2825	Uzbek	3136
Croatian	1828	Kashmiri	2129	Russian	2831	Vietnamese	3219
Czech	1329	Kazakh	2121	Samoan	2923	Volapük	3225
Danish	1411	Kirghiz	2135	Sanskrit	2911	Welsh	1335
Dutch	2422	Korean	2125	Scots Gaelic	1714	Wolof	3325
English	1524	Kurdish	2131	Serbian	2928	Xhosa	3418
Esperanto	1525	Laothian	2225	Serbo-Croatian	2918	Yiddish	2019
Estonian	1530	Latin	2211	Shona	2924	Yoruba	3525
Faroese	1625	Latvian, Lettish	2232	Sindhi	2914	Zulu	3631

Troubleshooting

Before calling a service technician, please check the following table for a possible cause of the symptoms and some solutions.

Symptoms	Solutions	Page
DVD/VCR		
DVD/VCR does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Unplug unit, then plug it back in. • Select the DVD or VCR mode before operating.	5 – 5 30,42
No picture.	• Antenna connection is not correct or antenna cable is disconnected. • The video channel is not in the correct position or the TV is not set to the video channel 3 or 4. • Check the unit is connected correctly. • The video input selector of the TV is not set to VIDEO. Set to VIDEO (or equivalent). • Channel is set to the external mode.	14~17 22 14~19 – –
No sound.	• Check the unit is connected correctly. • Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode.	14~19 – 31,44
The remote control does not function.	• Aim the remote control at the remote sensor. • Operate within Approx. 7 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly.	13
No Cable TV reception.	• Check all Cable TV connections. • Station or Cable TV system problems, try another station.	16,17
VCR		
TV recording does not work.	• The erase prevention tab of the video cassette is broken off. • The unit is in the external input mode.	29,34
Timer recording does not work.	• The time is not set correctly. • The recording start/end time is not set correctly. • The TIMER REC has not been pressed (⏲ is not lit).	24 37 37
Noise bars on screen.	• Tracking adjustment beyond range of automatic tracking circuit. Try Manual tracking adjustment. • Video heads are dirty. • The tape is worn or damaged.	31 31 –
DVD		
Display is not shown in your language.	• Select proper language in the menu options.	57
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play DVD-ROMs, etc.	42 7 8
Stopping playback, slow-motion play, repeat play, or memory play, etc. cannot be performed.	• Some discs may not do some of the functions.	–
No picture, or the screen is blurred or divided into two parts.	• The PROGRESSIVE scan is "On" although the unit is connected to a TV via the VIDEO OUT or the S-VIDEO OUT jack.	59
No 4:3 (16:9) picture.	• The setup does not match your TV.	57
No on-screen display.	• Select Display "On".	57
No surround sound.	• The setup does not match your stereo system.	20
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the Parental setup.	59,60
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	50,51
No subtitle.	• Some discs have no subtitles. • Subtitles are cleared. Press SUBTITLE.	51
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	49
✋ appears on the screen.	• The function is prohibited with the unit or the disc.	44

Specifications

General

Power supply	AC 120 V 60 Hz
Power consumption	Operation: 18 W, Stand by: 2 W
Weight	7.7 lbs (3.5 kg)
Dimensions	Width: 16-15/16 inches (430 mm) Height: 3-1/2 inches (89.5 mm) Depth: 9-1/16 inches (230 mm)
Tuner	181 channel freq. synthesized VHF 2-13 UHF 14-69 Cable TV 113 Channels
Antenna input/output	UHF/VHF In/Out: 75 K coaxial
RF channel output	Channel 3 or 4, Switchable
Color system	NTSC
Video head	4 Rotary heads
Audio track	Hi-Fi sound - 2 Tracks / MONO sound - 1 Track
Hi-Fi frequency response	20 Hz to 20,000 Hz
Hi-Fi dynamic range	More than 90dB
FF/REW time at 25˚C (77˚F)	Approx. 1 minute and 48 seconds (with T-120 Cassette Tape)
Applicable disc	DVD (12 cm, 8 cm), CD (12 cm, 8 cm)
Frequency range	DVD: 4 Hz-22 kHz, CD: 4 Hz-20 kHz
S/N ratio	90dB (DVD)
Harmonic distortion	0.02% (DVD)
Wow and flutter	Less than 0.01% Wrms
Operating conditions	Temperature: 5˚C-40˚C (41˚F-104˚F), Operating status: Horizontal

Input/Output

DVD/VCR	
Video input	1.0 V (p-p), 75 K, negative sync., pin jack x 2
Video output	1.0 V (p-p), 75 K, negative sync., pin jack x 1
Audio input	–8 dBm, 50 kK, negative sync., pin jack (L/R) x 2
Audio output	–8 dBm, 1 kK, negative sync., pin jack (L/R) x 1
DVD	
S-video output	(Y) 1.0 V (p-p), 75 K, negative sync., Mini DIN 4-pin x 1 (C) 0.286 V (p-p), 75 K
Component video output	(Y) 1.0 V (p-p), 75 K, negative sync., pin jack x 1 (P_B)/(P_R) 0.7 V (p-p), 75 K, pin jack x 2
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 K, pin jack x 1
Audio output (ANALOG)	–12 dBm, 1 kK, pin jacks (L, R) x 1

Supplied accessories

Audio/video cable 1
Remote control (SE-R0170) 1
Batteries (R03/AAA) 2
75 K coaxial cable 1

• This model complies with the above specifications.
• Designs and specifications are subject to change without notice.
• This model may not be compatible with features and/or specifications that may be added in the future.

Limited warranty

Limited United States Warranty
DVD/VCR Combinations - Exchange Warranty
Toshiba America Consumer Products, L.L.C. ("TACP") makes the following limited warranties to original consumers in the United States. **THESE LIMITED WARRANTIES EXTEND TO THE ORIGINAL CONSUMER PURCHASER OR ANY PERSON RECEIVING THIS DVD/VCR COMBINATION AS A GIFT FROM THE ORIGINAL CONSUMER PURCHASER AND TO NO OTHER PURCHASER OR TRANSFEREE.**

PRODUCTS PURCHASED IN THE U.S.A. AND USED ANYWHERE OUTSIDE OF THE U.S.A., INCLUDING, WITHOUT LIMITATION, CANADA AND MEXICO, ARE NOT COVERED BY THESE WARRANTIES.

PRODUCTS PURCHASED ANYWHERE OUTSIDE OF THE U.S.A., INCLUDING, WITHOUT LIMITATION, CANADA AND MEXICO, AND USED IN THE U.S.A., ARE NOT COVERED BY THESE WARRANTIES.

Limited Ninety (90) Day Warranty
TACP warrants this DVD/VCR Combination and its parts against defects in materials or workmanship for period of ninety (90) days after the date of original retail purchase. **DURING THE FIRST NINETY (90) DAYS AFTER THE DATE OF ORIGINAL RETAIL PURCHASE, TACP WILL EXCHANGE A DEFECTIVE DVD/VCR COMBINATION WITH A NEW OR REFURBISHED DVD/VCR COMBINATION WITHOUT CHARGE TO YOU. YOU MUST CONTACT TACP'S CONSUMER SOLUTIONS CENTER FOR INSTRUCTIONS ON HOW TO PROCESS YOUR IN WARRANTY EXCHANGE REQUEST. THE CONSUMER IS RESPONSIBLE FOR ALL INBOUND TRANSPORTATION AND INSURANCE CHARGES FOR THE DVD/VCR COMBINATION TO THE EXCHANGE CENTER. DURING THE PERIOD THAT COMMENCES ON THE DATE THAT IS NINETY ONE (91) DAYS AFTER THE DATE OF ORIGINAL RETAIL PURCHASE AND BEYOND, TACP WILL EXCHANGE A DEFECTIVE DVD/VCR COMBINATION WITH A NEW OR REFURBISHED DVD/VCR COMBINATION FOR A NOMINAL FEE. YOU MUST CONTACT TACP'S CONSUMER SOLUTIONS CENTER FOR INSTRUCTIONS ON HOW TO PROCESS YOUR EXCHANGE REQUEST. THE CONSUMER IS RESPONSIBLE FOR ALL INBOUND TRANSPORTATION AND INSURANCE CHARGES FOR THE DVD/VCR COMBINATION TO THE EXCHANGE CENTER.**

*** Rental Units**
The warranty for rental units begins with the first rental or thirty (30) days after the date of shipment to the rental firm, whichever comes first.

*** Commercial Units**
DVD/VDR Combinations sold and used for commercial purposes have a limited ninety (90) day warranty for all parts and labor.

Owner's Manual and Product Registration Card
Read this owner's manual thoroughly before operating this DVD/VCR Combination. Complete and mail the enclosed product registration card or register your product on-line at www.tacp.toshiba.com/service as soon as possible. By registering your DVD/VCR Combination you will enable TACP to bring you new products specifically designed to meet your needs and help us to contact you in the unlikely event that a safety notification is required under the Consumer Product Safety Act. Failure to complete and return the product registration card does not diminish your warranty rights.

Your Responsibility
THE ABOVE WARRANTIES ARE SUBJECT TO THE FOLLOWING CONDITIONS:

(1) You must retain your bill of sale or provide other proof of purchase.

(2) All warranty servicing of this product must be made by an Authorized TACP Service Station.

(3) The warranties from TACP are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.

(4) Labor service charges for set installation, setup, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.

(5) Warranties extend only to defects in materials or workmanship as limited above, and do not extend to any DVD/VCR Combination or parts that have been lost or discarded by you or to damage to the DVD/VCR Combination or parts caused by fires, misuse, accident, Acts of God (such as lightning or fluctuations in electric power), improper installation, improper maintenance, or use in violation of instructions furnished by TACP; use or malfunction through simultaneous use of this product and connected equipment; or to units that have been modified or had the serial number removed, altered, defaced, or rendered illegible.

How to Obtain Warranty Services
If, after following all of the operating instructions in this manual and checking the section "Troubleshooting," you fund that service is needed:

(1) For instructions on how to obtain warranty service for exchange program DVD/VCR Combinations, contact TACP's Call Center toll free at 1-866-583-7353.

(2) You must include the original bill of sale (or a copy of the original bill of sale) or other proof of purchase along with the entire DVD/VCR Combination when sending the DVD/VCR Combination to the Authorized TACP Service Station specified by TACP's Call Center. You must pay for all transportation and insurance charges for the DVD/VCR Combination to and from the Authorized TACP Service Station.

For additional information, visit TACP's website: www.tacp.toshiba.com

ALL WARRANTIES IMPLIED BY THE LAW OF ANY STATE OF THE U.S.A., INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THE LIMITED WARRANTIES SET FORTH ABOVE. WITH THE EXCEPTION OF ANY WARRANTIES IMPLIED BY THE LAW OF ANY STATE OF THE U.S.A. AS HEREBY LIMITED, THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, GUARANTEES, AGREEMENTS, AND SIMILAR OBLIGATIONS OF TACP WITH RESPECT TO THE REPAIR OR REPLACEMENT OF ANY PARTS. IN NO EVENT SHALL TACP BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, BUSINESS INTERRUPTION, OR MODIFICATION OR ERASURE OF RECORDED DATA CAUSED BY USE, MISUSE OR INABILITY TO USE THIS PRODUCT).

No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE IN THE U.S.A. SOME STATES OF THE U.S.A. DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, WHEN AN ACTION MAY BE BROUGHT, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE PROVISIONS MAY NOT APPLY TO YOU UNDER SUCH CIRCUMSTANCES.

Memo

Memo

CAUTION

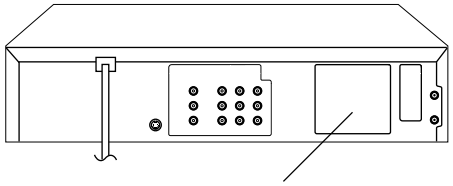
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.

PREPARATION OF SERVICING

The laser diode used for a pickup head may be destroyed with external static electricity.
Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, the life of the product may be shortened.
Please perform the following measure against static electricity, be careful of destruction of a laser diode at the time of repair.

- Place the unit on a workstation equipped to protect against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

IMPORTANT SERVICE SAFETY INFORMATION

Safety precautions to be followed during servicing:

1. Parts marked with an ⚠ are critical parts for safety. Replace only with the one described in the parts list.
2. Before returning the DVD product to the customer, make the appropriate leakage current check or resistance measurements to ensure that exposed parts are properly insulated from the supply circuit.

A leakage current check is recommended for this unit. Plug the AC line cord directly into a 120V 60Hz AC outlet (do not use an isolation transformer for this check). Use a leakage current tester (Fig. 1) or a metering system which complies with Underwriters Laboratories (UL 1492). Measure for current from all exposed metal parts of the cabinet to a known earth ground: particularly, any exposed metal part having a return path to the chassis. Any current measured must not exceed 0.5mA. Any measurement not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the unit to the customer.

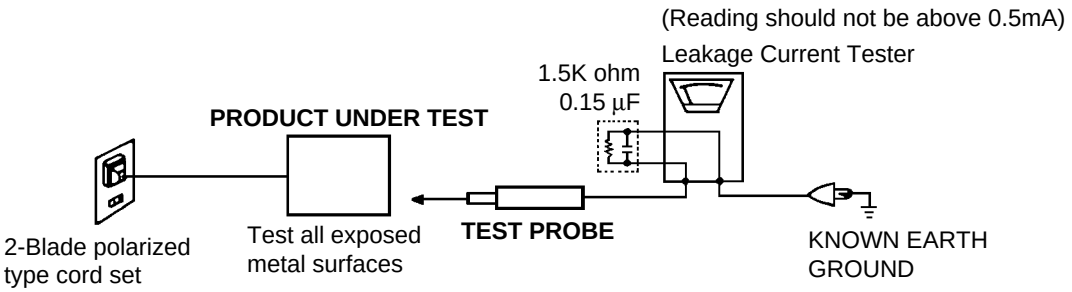


Fig. 1 AC Leakage Test

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS**
   Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **POWER SOURCES**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **LIGHTNING**
    To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
    Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
    Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

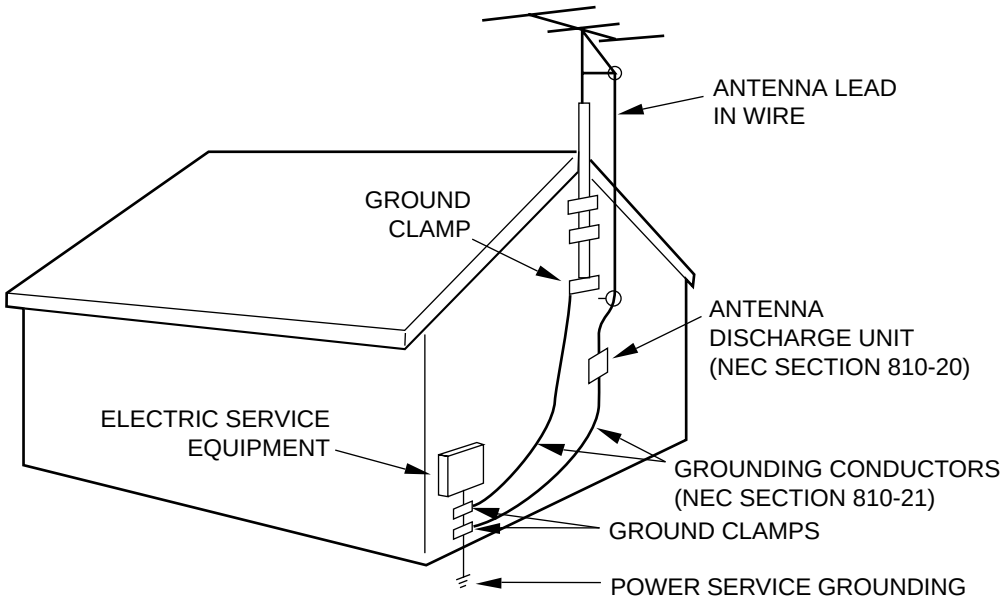
30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer’s attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



NEC-NATIONAL ELECTRICAL CODE

S2898A

WHEN REPLACING DVD DECK

[When removing the DVD Deck]

Before removing Pick Up PCB and DVD PCB connector, short circuit the position shown in **Fig. 1** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.

[When installing the DVD Deck]

Remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

NOTE

- Before your operation, please read “PREPARATION OF SERVICING”.
- Use the Lead Free solder.
- Manual soldering conditions
  - Soldering temperature: 320 ± 20˚C
  - Soldering time: Within 3 seconds
  - Soldering combination: Sn-3.0Ag-0.5Cu
- When Soldering/Removing of solder, use the draw in equipment over the Pick Up Unit to prevent the Flux smoke from it.

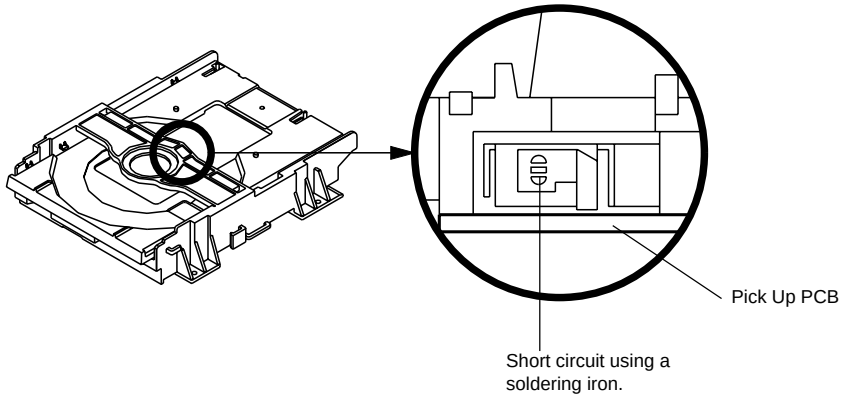


Fig. 1

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove the screw ① of the Deck Chassis and remove the Loading Motor. **(Refer to Fig. 2)**
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
4. Rotate the Clutch Ass'y either derection to wind the Video Tape in the Cassette Case.
5. Repeat steps 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch the tape.

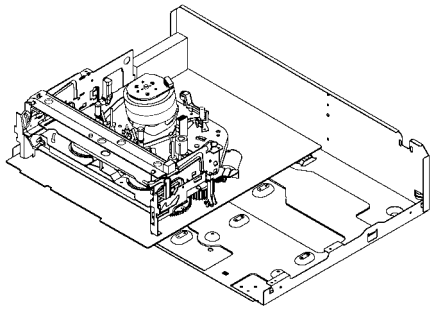


Fig. 1

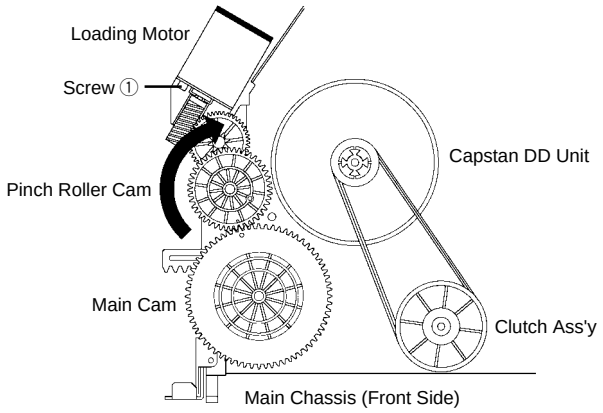


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the Main Gear in the direction of the arrow by hand. **(Refer to Fig. 1)**
3. Manually open the Tray.

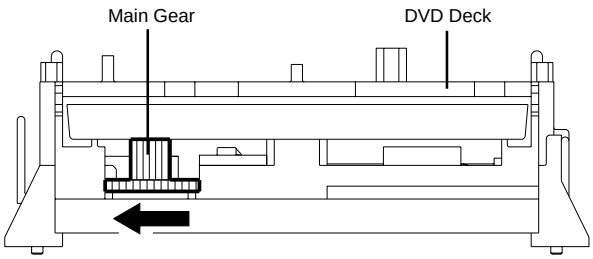


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared

TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press it in order of 'SETUP', 'SUBTITLE', '3', 'AUDIO' and '0' key of a remote control unit.
4. The On Screen Display message ' ⏏ ' will appear.
5. The Tray Lock has now been set up.

To unlock the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press it in order of 'SETUP', 'SUBTITLE', '3', 'AUDIO' and '0' key of a remote control unit.
4. The On Screen Display message ' ⏏ ' will appear.
5. The Tray Lock has now been cleared.

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GENERAL SPECIFICATIONS

G-1	**Outline of the product**				DVD VIDEO PLAYER & VHS Player / Recorder
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD, SVCD, DVD-R/RW (VIDEO FORMAT ONLY)
		Disc Diameter			120 mm , 80 mm
		Drive			DM3PA
		Search speed			Fwd 4 steps
				Actual	2-120 times (DVD)
					4-40 times (CD)
					Rev 4 steps
				Actual	2-120 times (DVD)
					4-40 times (CD)
		Slow speed			Fwd 1/7-1/2 times
				Actual	--
					Rev --
				Actual	--
G-3	**VCR**	System			VHS Player / Recorder
	System	Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB(PAL60Hz)			No
		Deck			OVD-7S
		Heads	Video Head		4Head
			FM Audio Head		2Head
			Audio / Control		Mono/Yes
			Erase (Full Track Erase)		Yes
			Erase (Normal Audio Track Erase)		No
		Tape	Rec	PAL	-
		Speed		NTSC	SP/SLP(EP)
			Play	PAL	-
				NTSC	SP/SLP(EP)
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				with Cassette	T-120
		Forward/Reverse		NTSC or PAL-M	SP/LP/SLP(EP) = 3x,5x / 7x,9x / 9x,15x
		Picture Search		PAL or SECAM	-
		Frame Advance			Yes
		Slow Speed			1/10
G-4	**Tuning**	Broadcasting System			US System M
	System	Tuner and		System	1Tuner
		Receive CH		Destination	US (w/CABLE)
				CH Coverage	2-69,4A,A-5~ A-1,A~I, J~ W, W+1-W+84
		Intermediate		Picture (FP)	45.75 MHz
		Frequency		Sound (FS)	41.25 MHz
				FP-FS	4.50 MHz
		Preset CH			-
		RF Converter Output			Yes
			Channel		3 or 4 ch
			Level / Impedance		66 dBu / 75 Ohm
			Sound Selector		No
		Stereo / Dual TV Sound			US-ST
		Tuner Sound Muting			Yes
G-5	**Power**	Power Source		AC	120V 60Hz
				DC	-
		Power Consumption			18 W at 120V 60Hz
				Stand by	2 W at 120V 60Hz
				Per Year	-- W
		Protector		Power Fuse	Yes
				Safety Circuit	Yes
				IC Protector(Micro Fuse)	No
G-6	**Regulation**			Safety	UL
				Radiation	FCC
				Laser	DHHS
G-7	**Temperature**			Operation	5oC - 40oC
				Storage	-20oC - 60oC
G-8	**Operating Humidity**				Less than 80% RH

GENERAL SPECIFICATIONS

G-9	**Signal**	Video Signal	Output Level	1 V p-p/75 ohm (DVD,VCR)
			S/N Ratio (Weighted)	65 dB(DVD) 50 dB(VCR)
			Horizontal Resolution	500 Lines (DVD) 230 Lines(VCR Mode)
		RGB Signal	Output Level	-
		Audio Signal	Input Level Microphone	-
			Input Level Line	-8 dBm/ 50k ohm (VCR, 0dBm=0.775Vrms)
			Output Level Line	-8 dBm/ 1k ohm (VCR, 0dBm=0.775Vrms) -12dBm/ 1k ohm (DVD, -20dBFs 0dBFs=2.0Vrms)
			Digital Output Level	0.5 V p-p / 75 ohm(DVD)
			S/N Ratio at (Weighted)	90dB(DVD), 42dB(VCR at SP)
			Harmonic Distortion (1KHz) Typical	0.02% (1KHz) (DVD) , 1.5% (1KHz) (VCR)
			Frequency Response : DVD Mode at DVD	4 Hz - 22 KHz
			DVD Mode at VIDEO CD	4 Hz - 20 KHz
			DVD Mode at CD	4 Hz - 20 KHz
			VCR Mode at SP	100Hz - 10 KHz
			VCR Mode at LP	-
			VCR Mode at SLP	100Hz - 4 KHz
		Hi-Fi Audio Signal	Dynamic Range : More than	90dB
			Frequency Response	20Hz ~20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	0.01

GENERAL SPECIFICATIONS

G-10	On Screen Display (DVD)	Menu			Yes
			Menu Type		Icon
			Language		Yes
				Menu	Yes
				Subtitle	Yes
				Audio	Yes
				OSD Language (Set up Language)	No
			Video		Yes
				E.B.L. (Enhanced Black Level)	Yes
				TV Screen Size	Yes
				OSD Display On/Off	Yes
				Picture Mode(Video/File/Auto)	Yes
				JPEG Interval	Yes
			Audio		Yes
				DRC (Dynamic Range Control)	No
				Dialogue On:DRC(TV)/ Off:DRC(Std)	Yes
				dts Decode	No
				Surround (Qsound)	Yes
			System		Yes
				Disc/Card Slot	No
				Password Lock/Unlock	Yes
				Parental (Rating Level)	Yes
				Select Files	Yes
				HDMI(480p/1080i/720p)	No
				Output	Progressive/Interlace
			Open		Yes
			Close		Yes
			No disc		Yes
			Reading		Yes
			Play		Yes
			Still/Pause		Yes
			Stop		Yes
			Prohibit Mark		Yes
			Step		Yes
			PBC		Yes
			Skip (>>|)		Yes
			Skip (|<<)		Yes
			Random		Yes (CD, VIDEO CD,SVCD MP3, WMA, JPEG)
			Repeat		Yes
			Slow+		Yes
			Slow-		No
			Search+		Yes
			Search-		Yes
			Jump		Yes
			Resume		Yes
			Title No.		Yes
			Chapter No.		Yes
			Track No.		Yes
			Time		Yes
			Subtitle No.		Yes
			Angle No.		Yes
			Vocal On/Off		No
			Audio No.		Yes
			Audio Stereo L/R		Yes (VIDEO CD, SVCD)
			Zoom		Yes
			Marker No.		Yes
			Surround On/Off		Yes
			Program Play Back		Yes (CD, VIDEO CD, SVCD, MP3, WMA, JPEG)
			MP3/WMA/JPEG	Folder Name	Yes
				File Name	Yes
				File No	Yes
				Time	Yes (MP3, WMA)
				Track No	Yes
			Progressive Scan Out ON/OFF		No

GENERAL SPECIFICATIONS

	On Screen Display(VCR)	Menu			Yes
			Menu Type		Character
			Timer Rec Set		Yes
			Auto Repeat On/Off		Yes
			SAP On/Off		Yes
			CH Set-Up		Yes
				TV/CABLE	Yes
				Auto CH Memory	Yes
				Add/Delete	Yes
			System Set Up		Yes
				Clock Set	Yes (Calendar 12H)
				Language	Yes
				No Noise Back Ground	Yes
				Auto Clock	Yes
				Standard Time	Yes
				Daylight Saving Time	Yes
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry			No
		Stereo, Audio Output, SAP			Yes
		Play/Stop/FF/Rew/Rec/OTR/Pause/Eject/Tape In/Repeat (Symbol Mark)			Yes
				CH/AV(LINE)	Yes
				Clock	Yes
				Repeat	Yes
				Tape Counter	Yes
				Index	Yes
				Tape Speed	Yes
				ATR / Manual Tracking	Yes
				ZERO Return	Yes
				Hi-Fi	Yes
G-11	**OSD Language**				English / French / Spanish
G-12	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31
		Timer Events			8 Program/ 1 Month
		One Touch Recording Max Time			6 Hours
		Timer Back-up (at Power Off Mode)			5sec
G-13	**Display**	DISPLAY			Yes
				DISPLAY type	LED Module (Amber, "Rec" &Timer symbol = Red)
				Clock/Counter,CH,Timer Rec,OTR, Play Rec,FF(Cue),Rew(Rev),Stop,ATR,Eject	No
				VCR	Yes
				DVD	Yes
				CD	Yes
				Clock	Yes (12h)
				AM	No
				PM	Yes
				Counter VCR	Yes (hour:min)
				DVD	Yes (hour:min)
				CD	Yes (min:sec)
				Eject	Yes
				Counter Remain	No
				Play	Yes
				Stop	No
				Rec	Yes
				FF / Cue	No
				REW / Review	No
				Pause / Still	Yes
				OTR (ITR)	No
				T-Rec	Yes
				Chapter	No
				TITLE	No
				TRACK	Yes
				Repeat	No
				Hi-Fi	No
				SP	No
				LP	No
				SLP	No
				CH	Yes
				RF Output CH	Yes
				Tape In	Yes
				Remocon Custom Code	No
				Progressive Scan Out	Yes

GENERAL SPECIFICATIONS

G-14	**Remote Control**	Unit		RC-KU
		Glow in Dark Remocon		No
		Remocon Format		TOSHIBA
		Format		TOSHIBA
		Custom Code		45-BA
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		46 Key
		Keys	Power	Yes
			DISPLAY/CALL	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Input Select	Yes
			Input Select / PROGRESSIVE	No
			UP/ SET+ / TRACKING+	Yes
			DOWN/ SET- / TRACKING-	Yes
			LEFT/CH-	Yes
			RIGHT/CH+	Yes
			VCR/DVD	Yes
			TV/VCR	Yes
			DVD MENU(MENU)	Yes
			TITLE (TOP MENU)	Yes
			SETUP MENU/VCR MENU	Yes
			SELECT/ENTER	Yes
			CLEAR/CANCEL	Yes
			RETURN	Yes
			PLAY	Yes
			STOP	Yes
			PAUSE/STILL/STEP	Yes
			FF(Cue)/SEARCH+	Yes
			REW(Review)/SEARCH-	Yes
			REC/OTR	Yes
			SKIP+ / INDEX+	Yes
			SKIP- / INDEX-	Yes
			AUDIO / AUDIO SELECT	Yes
			ANGLE/COUNTER RESET	Yes
			SUBTITLE/ATR	Yes
			PLAY MODE/SPEED	Yes
			T-REC	Yes
			CLOCK / COUNTER	Yes
			JUMP/ZERO RETURN	Yes
			ZOOM/CM SKIP	Yes
			REPEAT A-B	Yes
			SLOW (Forward)	Yes
			MARKER	Yes
			OPEN/CLOSE	Yes
			EJECT	Yes

GENERAL SPECIFICATIONS

G-15	Features (DVD)	Auto Power Off		No
		Video CD Playback		Yes
		SVCD Playback		Yes
			Overlay Graphics And Text	No
			Command List	No
			Entry Point Jump	No
		MP3 Playback		Yes
		WMA Playback		Yes
		JPEG Playback		Yes
		Progressive Scan Out		Yes
		Digital Out	Dolby Digital	Yes
			MPEG	Yes
			PCM	Yes
			DTS	Yes
		Down Mix Out	(Dolby Digital)	Yes
			(DTS)	No
		Surround		Qsound
		Screen Saver		Yes
		Tray Lock		Yes
		Auto Stop		No
		Audio DAC		192kHz / 24bit
		Closed Caption signal in VBI (DVD Playback)		Yes
	Features (VCR)	Auto Head Cleaning		No
		Auto Power Off		No
		Forward/Reverse Picture Search		Yes
		VIDEO PLUS+ (SHOWVIEW, G-CODE)		No
		One Touch Playback		No
		Auto CH Memory		Yes
		AREA CODE		No
		Auto Clock Set		Yes
		Index Search		Yes
		SQPB		Yes
		CATV		Yes
		Energy Star		No
		MTS (SAP)		Yes
		CM Skip (30sec x 6 Times)		Yes
		Copy (Disc to Tape)		Yes (by Conditioning)
G-16	Accessories	Owner's Manual	Language	English
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Guarantee Card		No
		Registration Card		Yes
		Warning Sheet		No
		Service Station List		No
		Important Tag		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes (Spanish)
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
		AC Cord		No
		AV Cord (1.2m)		Yes
		75 Ohm Coaxial Cable (0.9m)		Yes
		S-Video Cable		No
		21pin cable		No
		800 No Sticker		No
		Toll Free Insert Sheet		No
		Safety Tip		No
		Sheet Information (Return)		Yes
		Netflix Card		No[From 1st Lot]
		PVC Warning Sheet		Yes

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Power	Yes
				Play	Yes
				Eject (VCR)	Yes
				Stop	Yes
				Rec/OTR	Yes
				Open/Close (DVD)	Yes
				CH +	Yes
				CH -	Yes
				FF/ Search(>>)	Yes
				Rew/Search(<<)	Yes
				Still/Pause	No
				Shuttle (Search/REV/FWD)	No
				DVD/VCR	Yes
				Main Power SW	No
			Rear	Attenuator	No
				S-Video/Component Video Selector	No
				RF Out (Slide SW)	No
				Main Power SW	No
		Terminals	Front	Video In	RCA x 1 (Black/Silver)
				Audio In	RCA x 2 (Stereo, Black/Silver)
			Rear	Video Output	RCA x1 (Yellow) S-Video x 1 (DVD Signal Only) Component x1 (RCA 3pin, DVD Signal Only)
				Audio Output	RCA x 4(Stereo, Red/White) Coaxial x 1 (Digital Audio, DVD Signal Only)
				Optical Out (Option)	No
				Video Input (Option)	RCA x 1 (Yellow)
				Audio Input (Option)	RCA x 2 (Stereo, Red/White)
				RF Input / Output	Yes
				Euro Scart	No
				AC Inlet	No
		Indicator	LED	Power	No
				Rec	No
				T-Rec	No
				TV/VCR	No
				DVD	Yes (GREEN)
				VCR	Yes (GREEN)
				Surround	No
				Level Meter	No
G-18	**Set Size**			Approx. W x D x H (mm)	430 x 230 x 89.5
G-19	**Weight**			Net (Approx.)	3.5 kg(7.7lbs)
				Gross (Approx.)	4.5 kg(9.9lbs)
G-20	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box	Material	Double / White
				W/Color Photo Label	No
				Dimensions W x D x H(mm)	497 x 340 x 174
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	80 cm
			Container Stuffing		2,015 Sets/40' container
G-21	**Material**		Cabinet	Front	PS 94V2 or More / DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	No
G-22	**Environment**		**Green Procurement of TOSHIBA**		**No**
				Pb-free	Phase3(Phase3A)

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET, FRONT CABINET AND OPERATION 1/2 PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connectors: **(CP651 and CP652)**.
4. Unlock the 7 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 9 screws ③.
7. Remove the Operation 1/2 PCB in the direction of arrow (C).

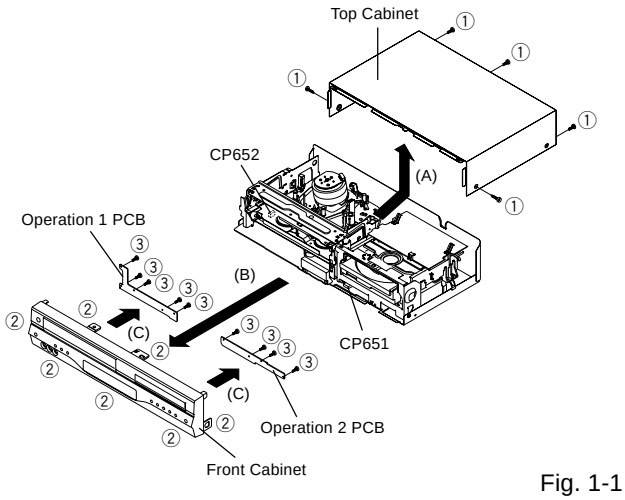


Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90˚ and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

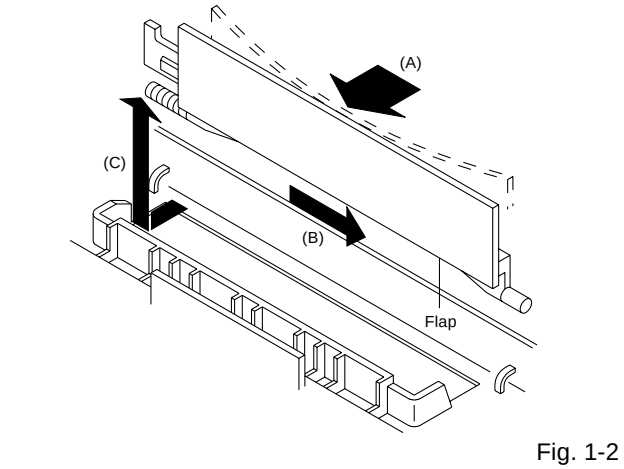


Fig. 1-2

1-3: DVD DECK/DVD PCB (Refer to Fig. 1-3)

1. Short circuit the position shown in **Fig. 1-3** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Unlock the support ① and remove the Deck Top Holder in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Remove the 2 screws ③.
5. Disconnect the following connectors: **(CP501, CP8001)**.
6. Remove the DVD Deck in the direction of arrow (B).
7. Disconnect the following connectors: **(CP2301, CP2302, CP2303)**.
8. Remove the 2 screws ④.
9. Remove the DVD PCB in the direction of arrow (C).
10. Remove the 3 screws ⑤.
11. Remove the Front Angle in the direction of arrow (D).

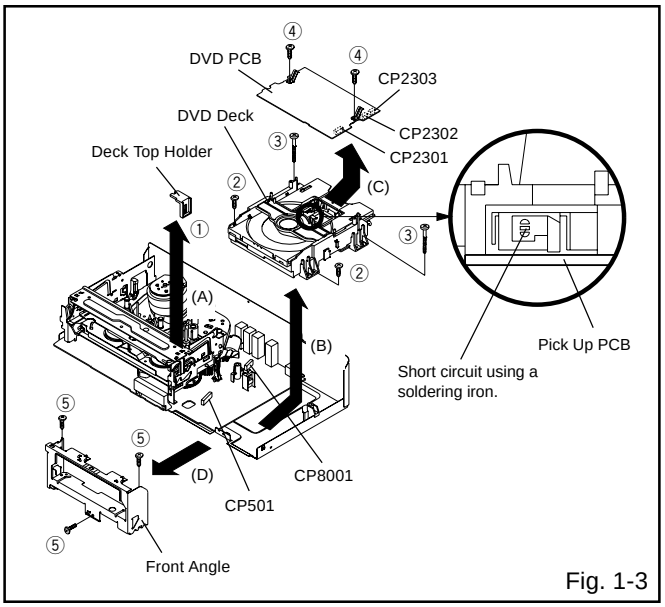


Fig. 1-3

NOTE

1. Before your operation, please read “PREPARATION OF SERVICING”.
2. Use the Lead Free solder.
3. Manual soldering conditions
   - Soldering temperature: 320 ± 20˚C
   - Soldering time: Within 3 seconds
   - Soldering combination: Sn-3.0Ag-0.5Cu
4. When Soldering/Removing of solder, use the drawing equipment over the Pick Up Unit to keep the Flux smoke away from it.
5. When installing the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

DISASSEMBLY INSTRUCTIONS

1-4: VCR DECK (Refer to Fig. 1-4)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Remove the screw ①.
2. Remove the FE Head.
3. Move the Cassette Holder Ass'y to the back side.
4. Remove the 2 screws ②.
5. Remove the 2 screws ③.
6. Disconnect the following connectors: **(CP101, CP102, CP3001)**.
7. Remove the VCR Deck in the direction of arrow.

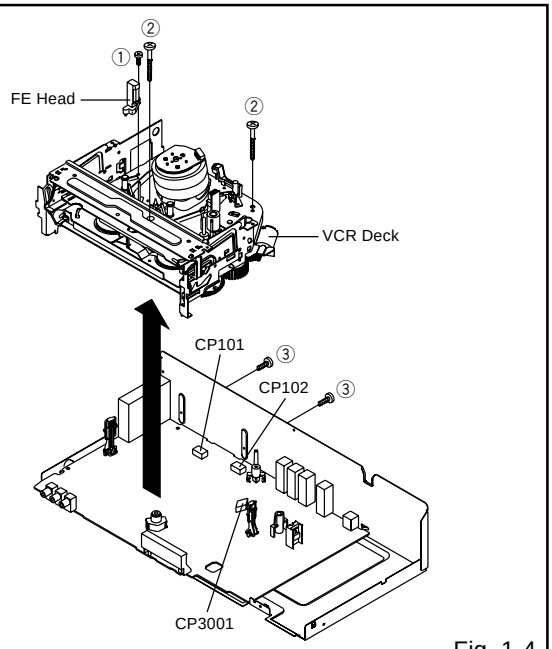


Fig. 1-4

1-5: VCR PCB (Refer to Fig. 1-5)

1. Remove the screw ①.
2. Remove the 5 screws ②.
3. Remove the 2 screws ③.
4. Remove the Shiel Jack.
5. Remove the VCR PCB in the direction of arrow.

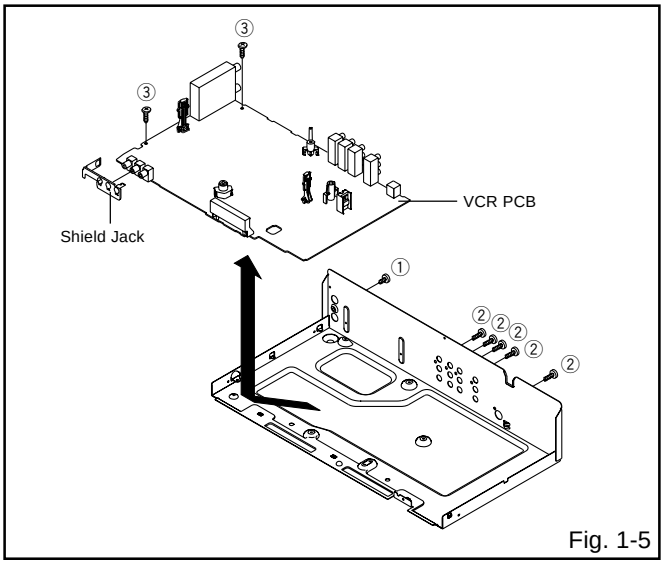


Fig. 1-5

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

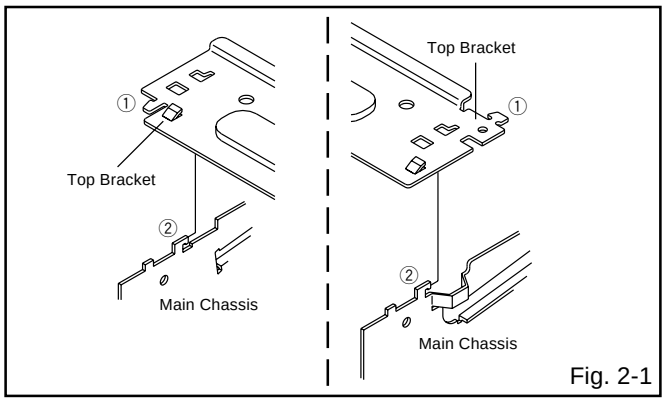


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

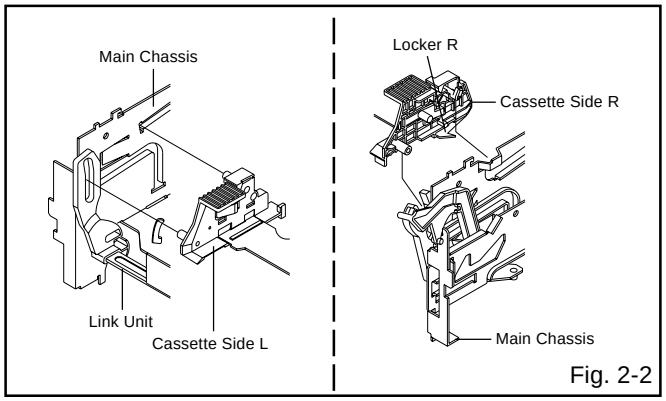


Fig. 2-2

2-3: LINK UNIT (Refer to Fig. 2-3)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

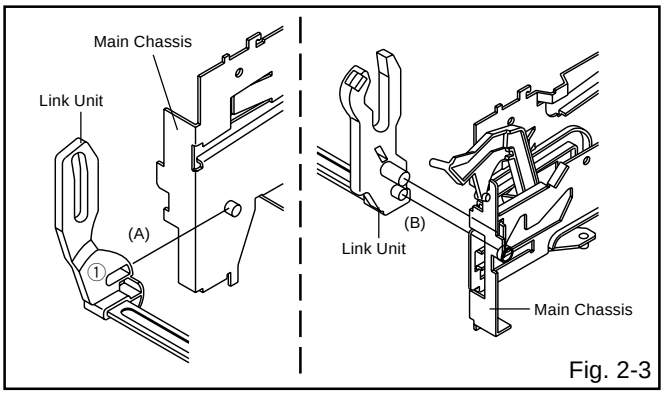


Fig. 2-3

2-4: LINK LEVER/FLAP LEVER (Refer to Fig. 2-4)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

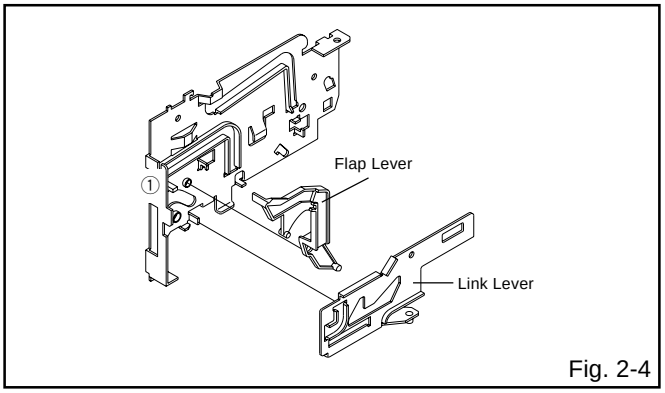


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

2-5: LOADING MOTOR/WORM (Refer to Fig. 2-5-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

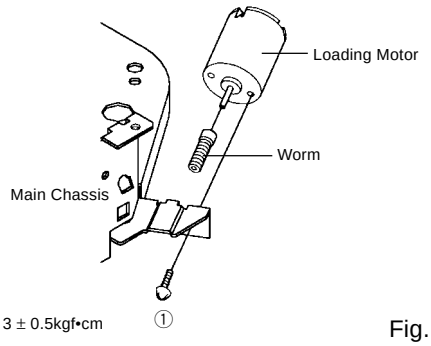


Fig. 2-5-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-5-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-5-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-5-D.

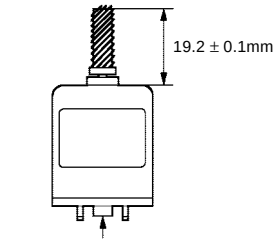


Fig. 2-5-B

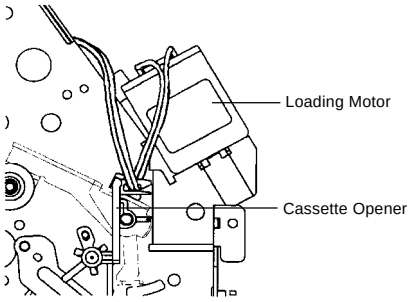


Fig. 2-5-C

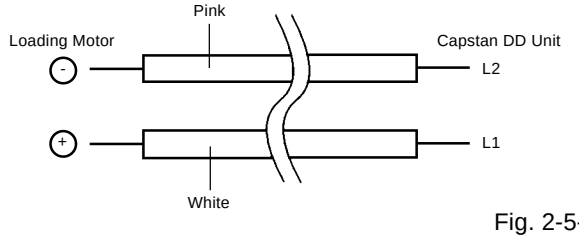


Fig. 2-5-D

2-6: TENSION ASS'Y (Refer to Fig. 2-6-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-6-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

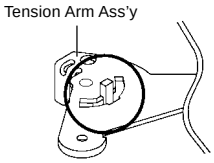


Fig. 2-6-A

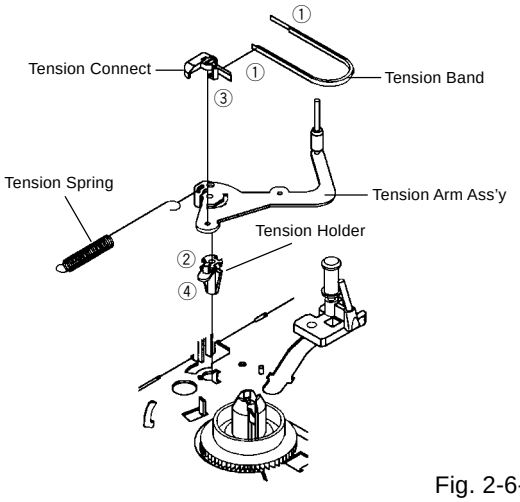


Fig. 2-6-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-6-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-6-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-6-E.

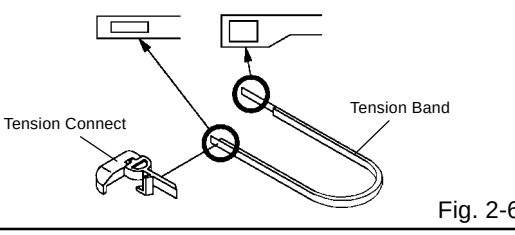


Fig. 2-6-C

DISASSEMBLY INSTRUCTIONS

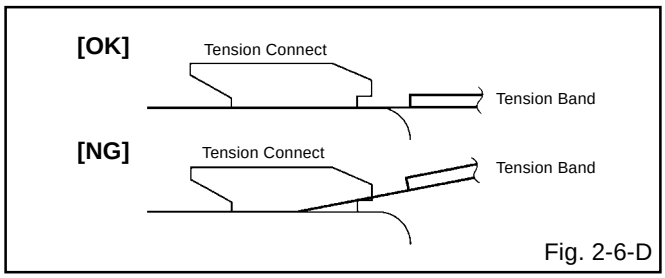


Fig. 2-6-D

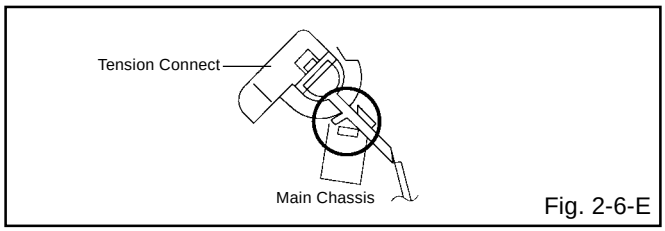


Fig. 2-6-E

2-7: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-7-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

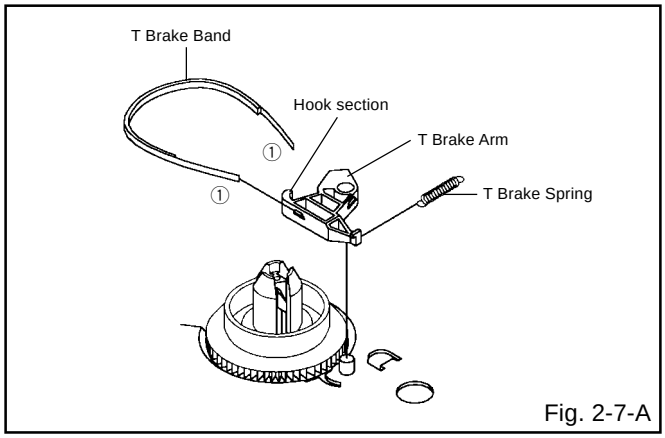


Fig. 2-7-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-7-B.

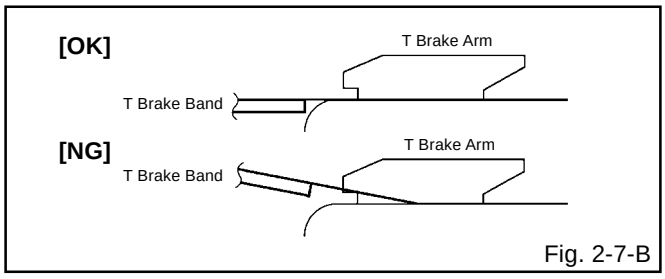


Fig. 2-7-B

2-8: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-8-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-8-A)** Touching may leave stains on section "A".
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

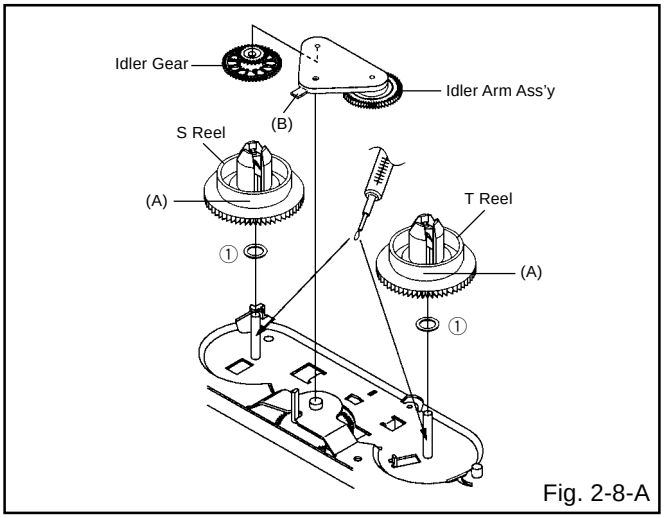


Fig. 2-8-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-8-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-8-C. And also set it so that the section "B" of Fig. 2-8-A is placed under the Main Chassis tab.

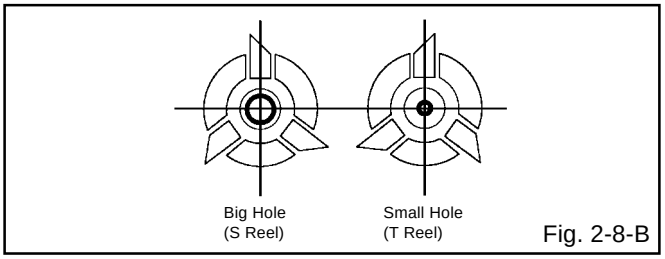


Fig. 2-8-B

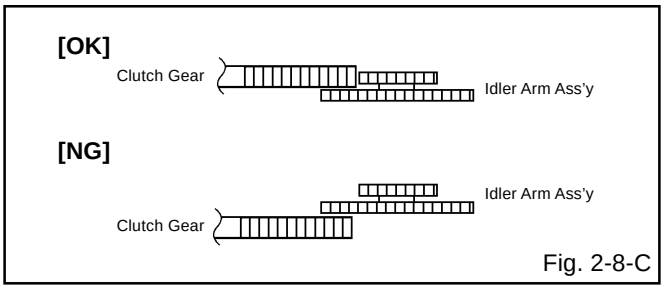


Fig. 2-8-C

DISASSEMBLY INSTRUCTIONS

2-9: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-9-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

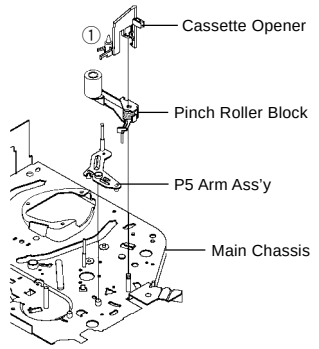


Fig. 2-9-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-9-B.

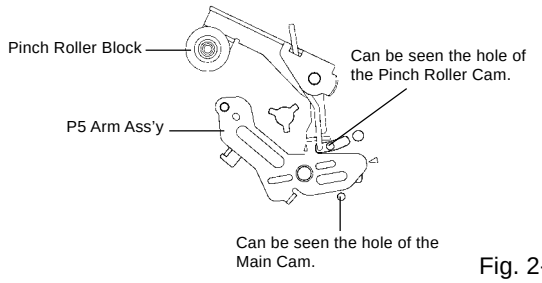


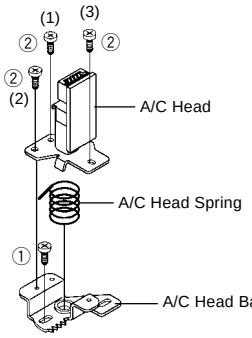
Fig. 2-9-B

2-10: A/C HEAD (Refer to Fig. 2-10-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-10-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-10-A

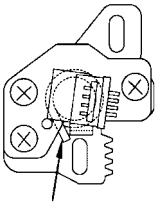
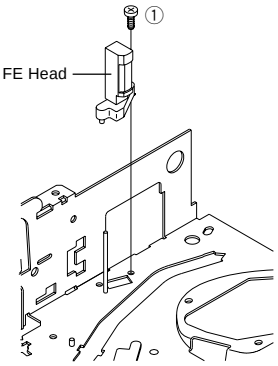


Fig. 2-10-B

2-11: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-11)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

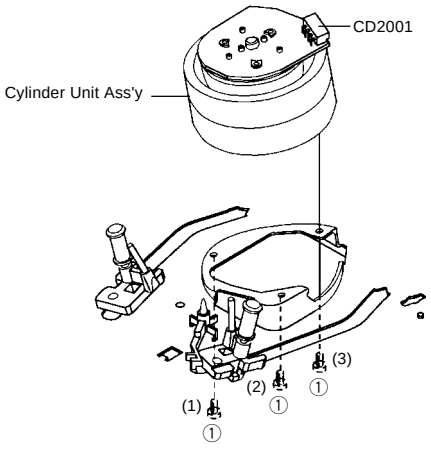
Fig. 2-11

2-12: CYLINDER UNIT ASS'Y (Refer to Fig. 2-12)

1. Disconnect the following connector: **(CD2001)**.
2. Remove the 3 screws ①.
3. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



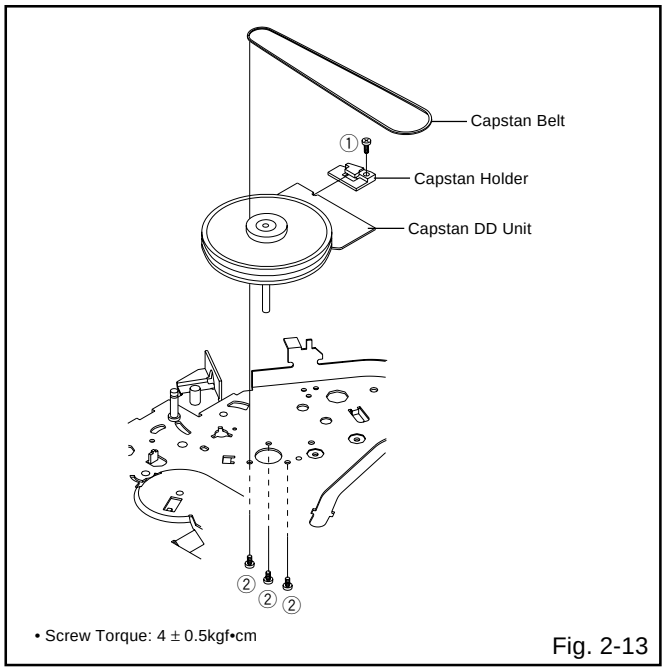
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-12

DISASSEMBLY INSTRUCTIONS

2-13: CAPSTAN DD UNIT (Refer to Fig. 2-13)

1. Remove the Capstan Belt.
2. Remove the screw ①.
3. Remove the Capstan Holder.
4. Remove the 3 screws ②.
5. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-13

2-14: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-14-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

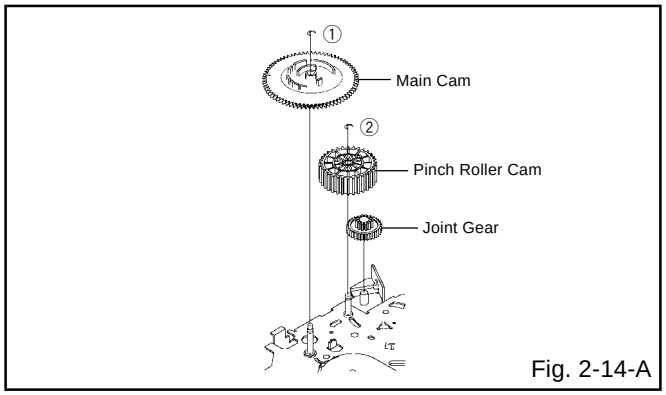


Fig. 2-14-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as shown in the circled section of Fig. 2-14-B so that the markers meet. **(Refer to Fig. 2-14-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

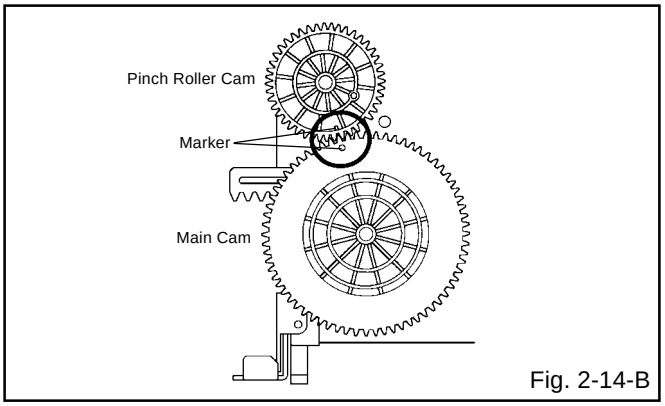


Fig. 2-14-B

2-15: LOADING GEAR S/T UNIT (Refer to Fig. 2-15-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

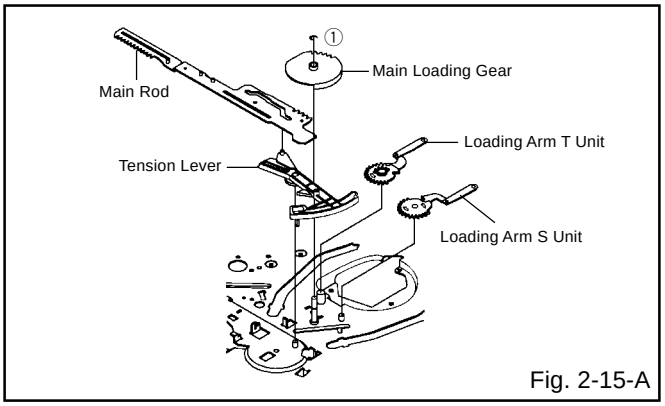


Fig. 2-15-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-15-B)**

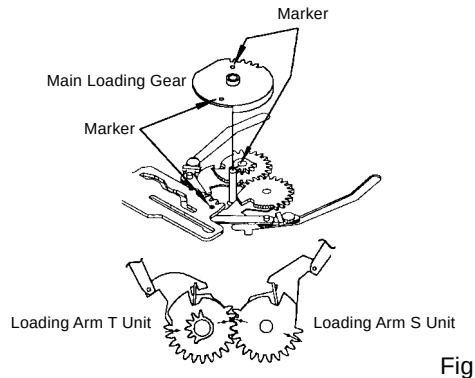


Fig. 2-15-B

2-16: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-16-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

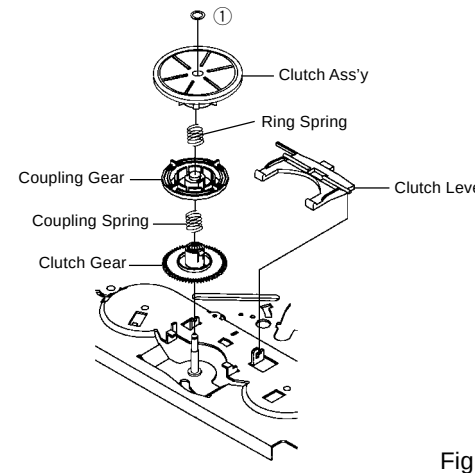


Fig. 2-16-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-16-B)**

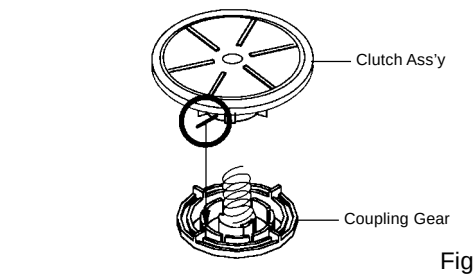


Fig. 2-16-B

2-17: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-17-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

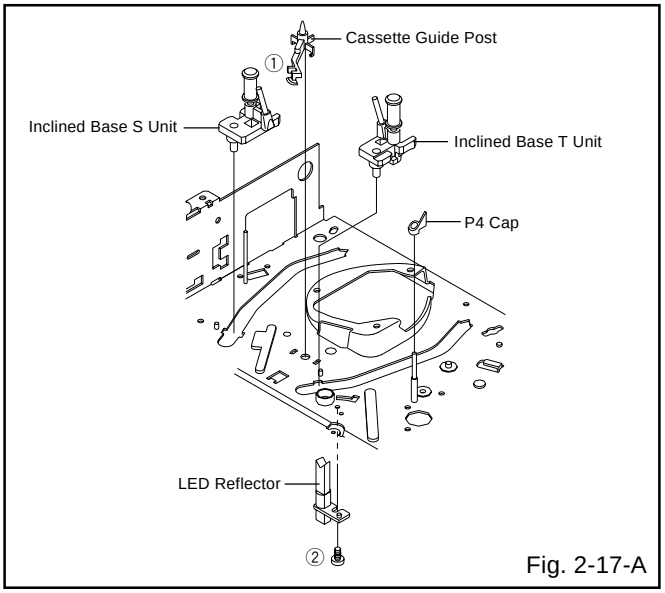


Fig. 2-17-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-17-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-17-C.

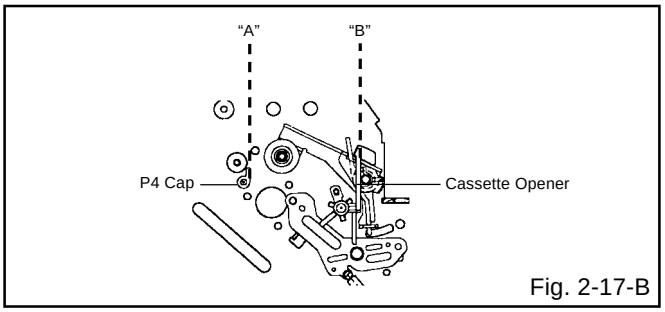


Fig. 2-17-B

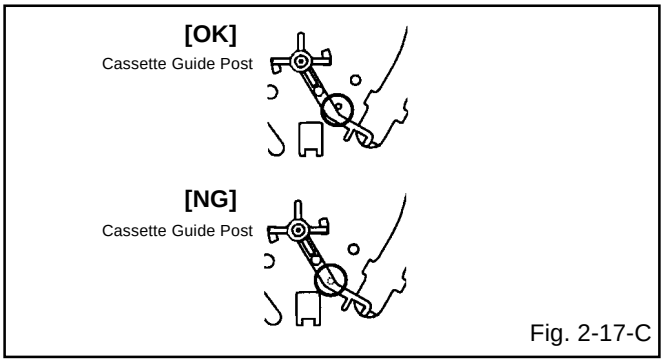


Fig. 2-17-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF DVD DECK PARTS

NOTE

1. Disassemble only the DVD DECK PARTS parts listed here. Minute adjustments are needed if the disassembly is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the 2 supports ① and remove the Tray.

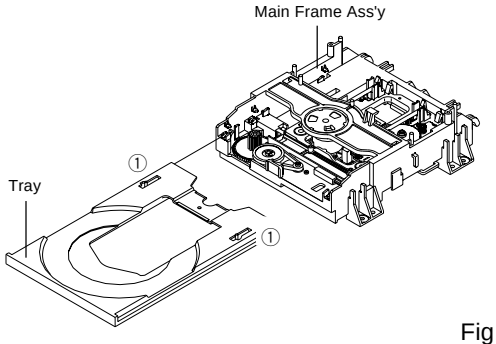


Fig. 3-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.

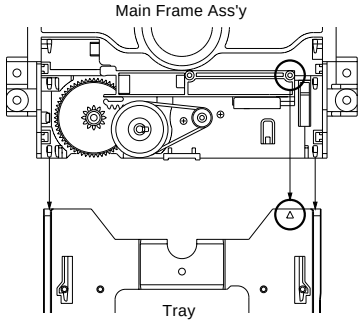


Fig. 3-1-B

3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2-A)

1. Remove the screw ①.
2. Unlock the 2 supports ②.
3. Remove the Insulator (R) from the Main Frame Ass'y.
4. Remove the Main Chassis Ass'y.

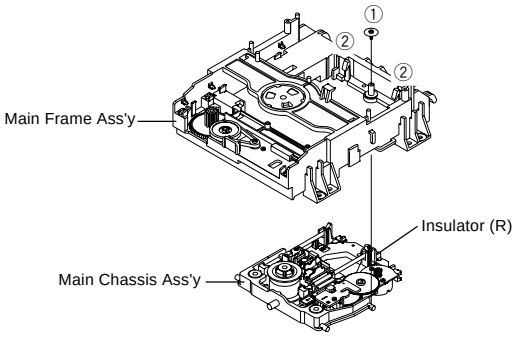


Fig. 3-2-A

NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (4) in order. **(Refer to Fig. 3-2-B)**
2. In case of the Main Chassis Ass'y installation, hook the wire on the Main Frame Ass'y as shown Fig. 3-2-C.

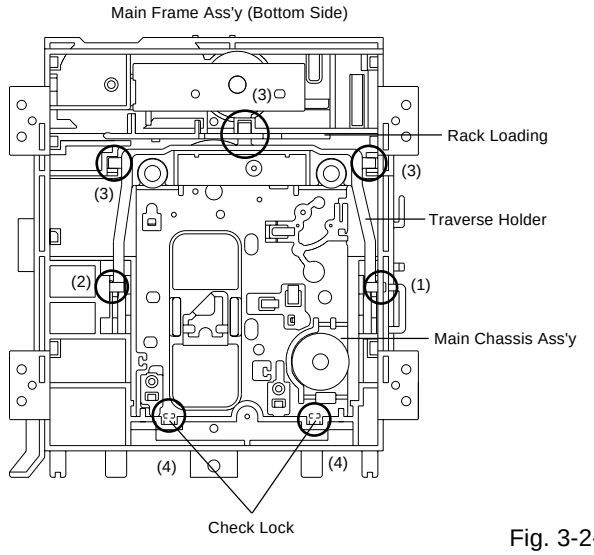


Fig. 3-2-B

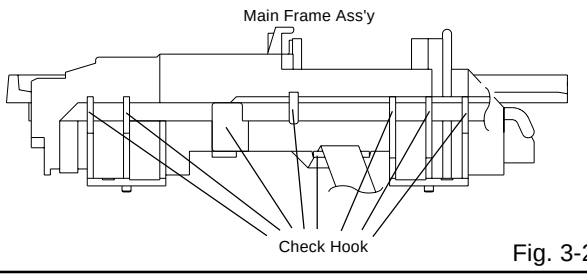
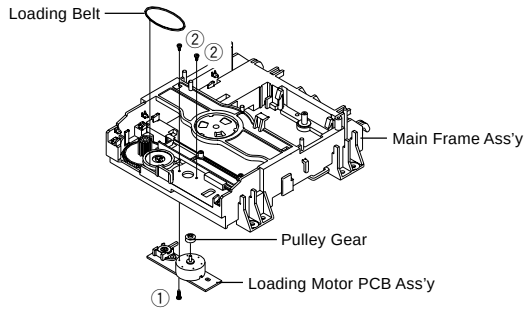


Fig. 3-2-C

DISASSEMBLY INSTRUCTIONS

3-3: LOADING MOTOR PCB ASS'Y/ LOADING BELT (Refer to Fig. 3-3-A)

1. Remove the Loading Belt.
2. Remove the screw ①.
3. Remove the 2 screws ②.
4. Remove the Loading Motor PCB Ass'y.
5. Remove the Pulley Gear.



• Screw Torque: 2.5 ± 0.3kgf•cm (Screw ①)
• Screw Torque: 1.0 ± 0.3kgf•cm (Screw ②)

Fig. 3-3-A

NOTE

1. In case of the Pulley Motor installation, check if the value of the Fig. 3-3-B is correct.
2. When installing the Loading Motor PCB Ass'y, install it correctly as Fig. 3-3-C.
3. In case of the Loading Motor PCB Ass'y installation, hook the wire on the Main Frame Ass'y as shown Fig. 3-3-C.

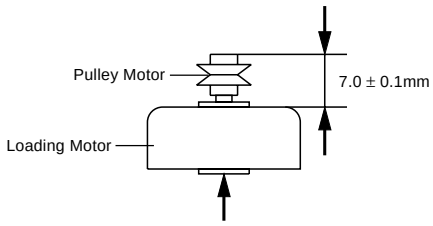


Fig. 3-3-B

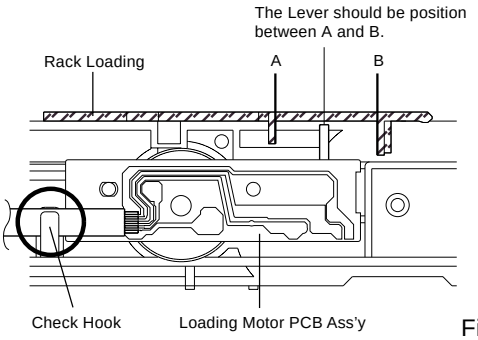


Fig. 3-3-C

3-4: RACK LOADING/MAIN GEAR/PULLEY GEAR (Refer to Fig. 3-4-A)

1. Press down the catcher ① and slide the Rack Loading.
2. Unlock the support ② and remove the Pulley Gear.
3. Remove the Main Gear.

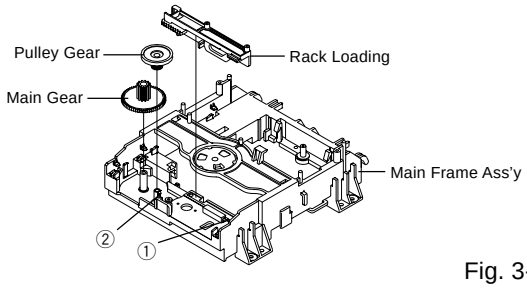


Fig. 3-4-A

NOTE

1. In case of the Rack Loading installation, do not mesh it to the Main Gear as shown the Fig. 3-4-B.

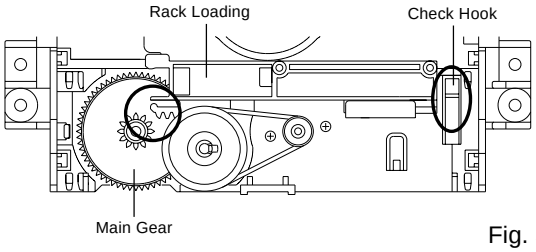


Fig. 3-4-B

3-5: CLAMPER ASS'Y (Refer to Fig. 3-5-A)

1. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ①.
2. Remove the Clamper Plate, Clamper Magnet and Clamper.

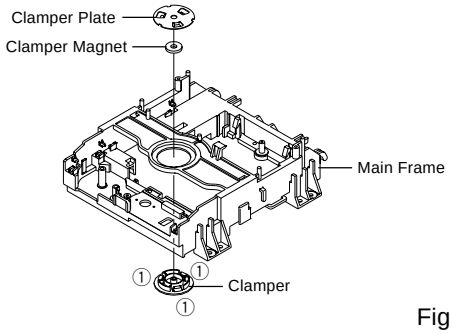


Fig. 3-5-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. In case of the Clamper Ass'y installation, install correctly as Fig. 3-5-B.

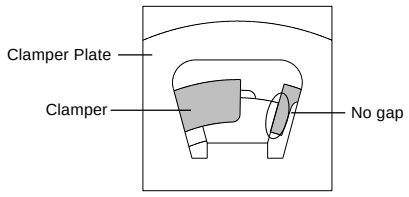


Fig. 3-5-B

3-6: TRAVERSE HOLDER/INSULATOR (F)/INSULATOR (R) (Refer to Fig. 3-6-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).
3. Remove the Insulator (R).

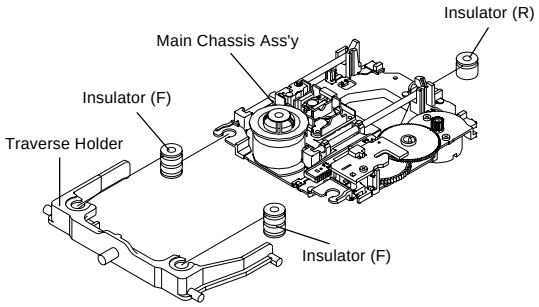


Fig. 3-6-A

NOTE

1. In case of the Insulator (F) installation, install correctly as Fig. 3-6-B.
2. In case of the Insulator (R) installation, install correctly as Fig. 3-6-C.

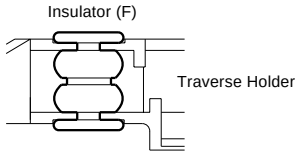


Fig. 3-6-B

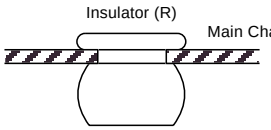


Fig. 3-6-C

3-7: SWITCH PCB ASS'Y/MIDDLE GEAR/FEED MOTOR (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.
3. Unlock the support ②.
4. Remove the Middle Gear.
5. Remove the 2 screws ③.
6. Remove the Feed Motor.
7. Remove the Motor Gear.

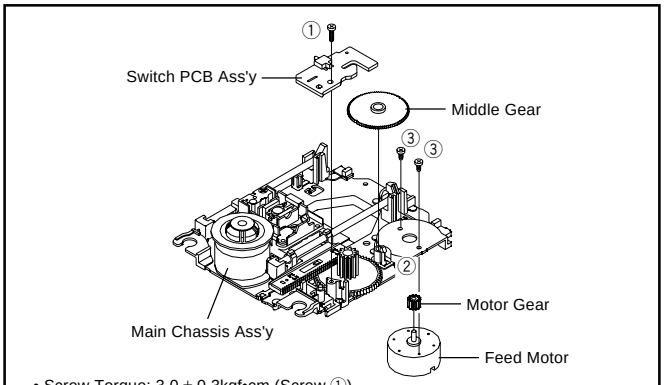


Fig. 3-7-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-7-B is correct.
2. When installing the wire of the Switch PCB Ass'y, install it correctly as Fig. 3-7-C.
3. After the assembly of the Main Chassis Ass'y, hook the wire on the Main Chassis Ass'y as shown Fig. 3-7-D.

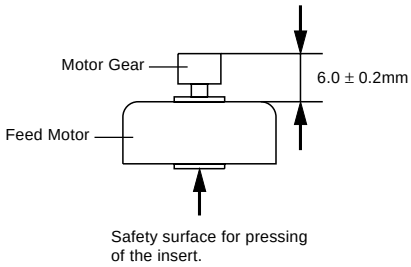


Fig. 3-7-B

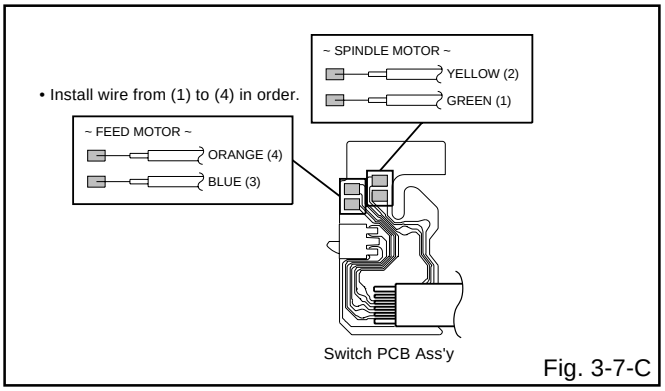
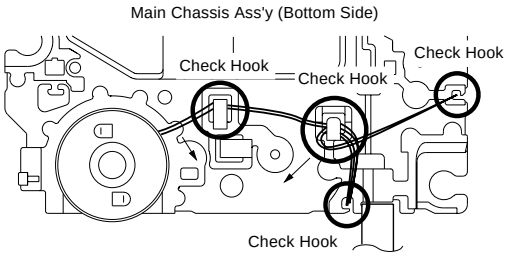


Fig. 3-7-C

DISASSEMBLY INSTRUCTIONS



• Loosen the wire in the direction of the arrow.

Fig. 3-7-D

3-8: FFC WIRE HANDLING

1. When installing the FFC, fold it correctly and install it as shown from Fig. 3-8-A to Fig. 3-8-C.

NOTE

1. Do not make the folding lines except the specified positions for the FFC.

[24 pin FFC]

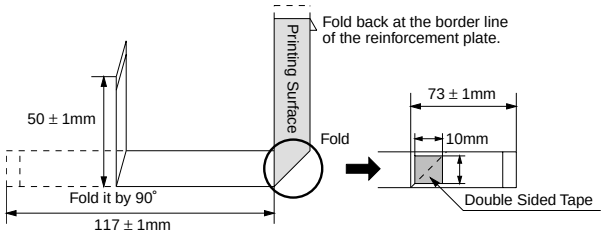
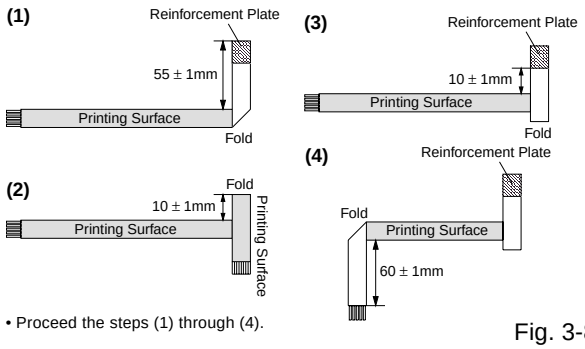


Fig. 3-8-A

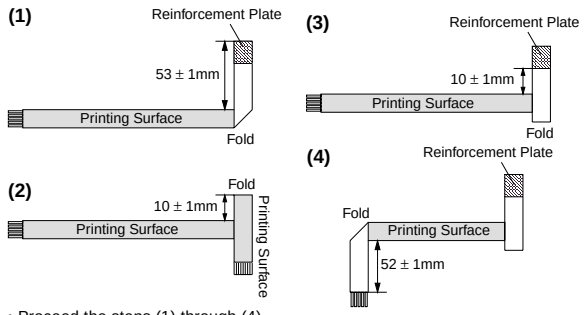
[5 pin FFC]



• Proceed the steps (1) through (4).

Fig. 3-8-B

[6 pin FFC]



• Proceed the steps (1) through (4).

Fig. 3-8-C

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 4-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

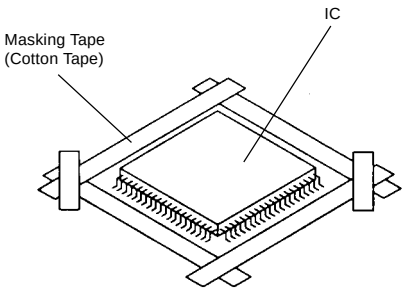


Fig. 4-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 4-2.)**

   NOTE

   Do not rotate or move the IC back and forth , until IC can move back and forth easily after desoldering the leads completely.

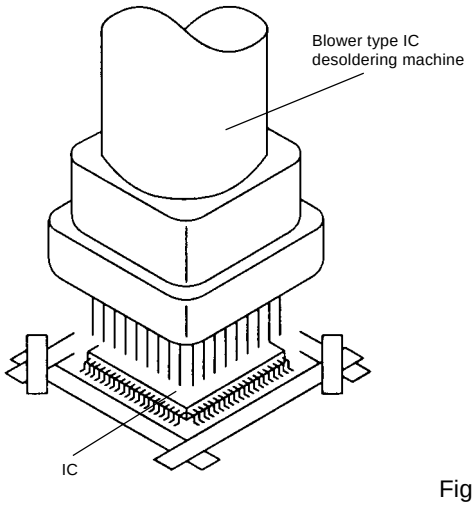


Fig. 4-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 4-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

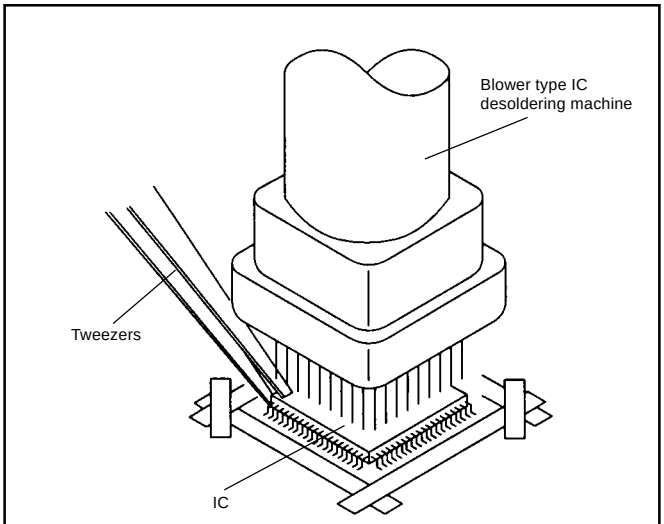


Fig. 4-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 4-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

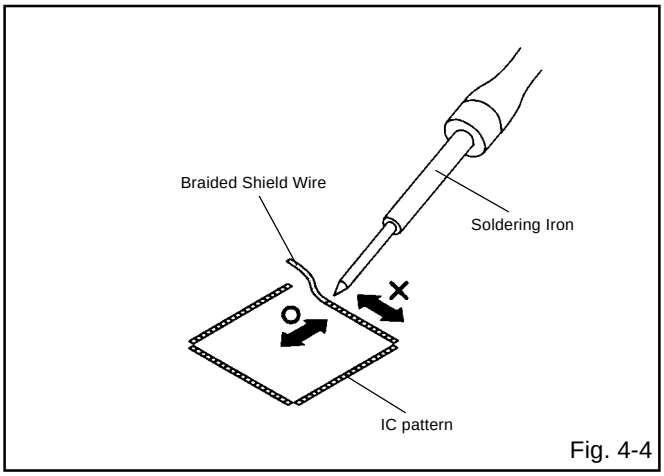


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**

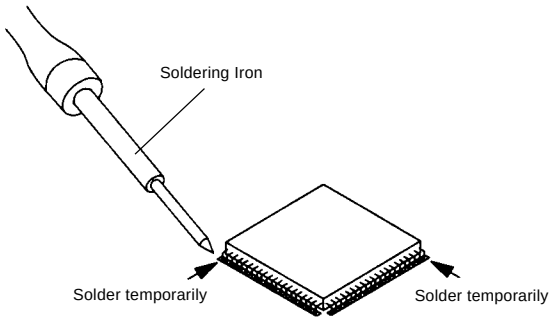


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**

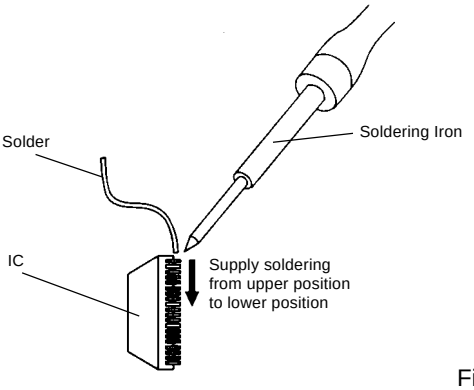


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

   NOTE

   Do not absorb the solder to excess.

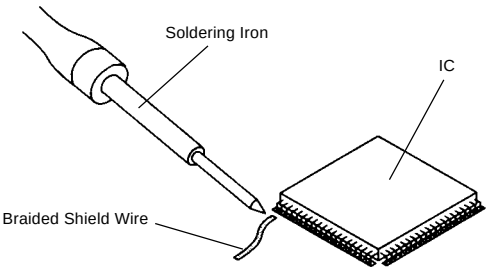


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**

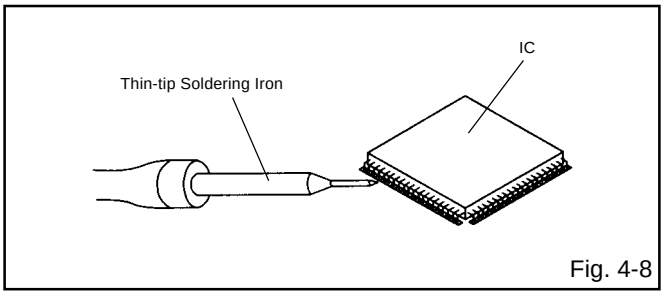


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time in the appropriate condition. (See below chart.)
In case of the main unit and remote control, press the remote control buttons first, then press the main unit buttons.

Set Condition	Set Key	Set Key	Standard Time	Operations
VCR mode	CH UP	FF	2 sec.	PLAY/REC total hours are displayed on the TV Monitor. Refer to the “PREVENTIVE CHECKS AND SERVICE INTERVALS” (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the “WHEN REPLACING EEPROM (MEMORY) IC”.
VCR mode	CH UP	PLAY	2 sec.	Initialization of factory VCR data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
VCR mode (Playback)	CH UP	STOP	2 sec.	Adjust the PG SHIFTER automatically. Refer to the “ELECTRICAL ADJUSTMENT”.
Power Off	CH DOWN	POWER	2 sec.	VCR operation mode at no connection of DVD. Refer to the “PREPARATION FOR SERVICING” NOTE: Although the DVD is connected, the DVD mode cannot be selected.

Set Condition	Set Key	Remocon Key	Standard Time	Operations
DVD mode (No disc)	REC	4	2 sec.	Initialization of factory DVD data. NOTE: Do not use this for normal servicing. This function will only work without the setting of DVD disc at DVD mode.
DVD mode (Stop)	REC	6	2 sec.	DVD Write mode. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing.
DVD mode (Stop)	STOP	1	3 sec.	Check for the firmware version. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing.
DVD mode (No disc)	STOP	7	3 sec.	Releasing of PARENTAL LOCK. Refer to the “PARENTAL CONTROL - RATING LEVEL”. NOTE: The function will only work without the setting of DVD disc at DVD mode.

Method	Operations
Press the following remocon keys continuously. SETUP → SUBTITLE → 3 → AUDIO → 0	Tray cannot be opened. Refer to the “TRAY LOCK”. NOTE: No indications on the screen when the Tray Lock is setting.
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the “MECHANICAL ADJUSTMENT” (GUIDE ROLLER) and “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the “PREPARATION FOR SERVICING”

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

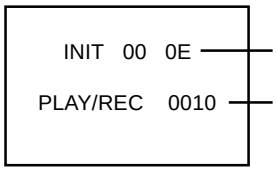
■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the VCR mode.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.



Initial setting content of MEMORY IC.

PLAY/REC total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

Fig. 1

PREVENTIVE CHECKS AND SERVICE INTERVALS

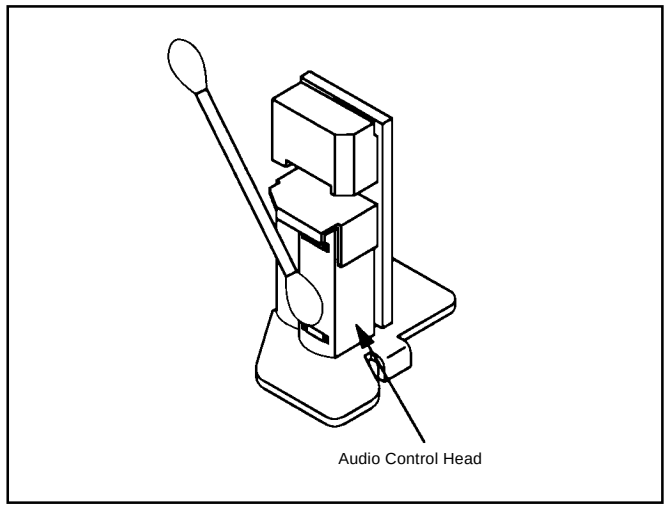
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

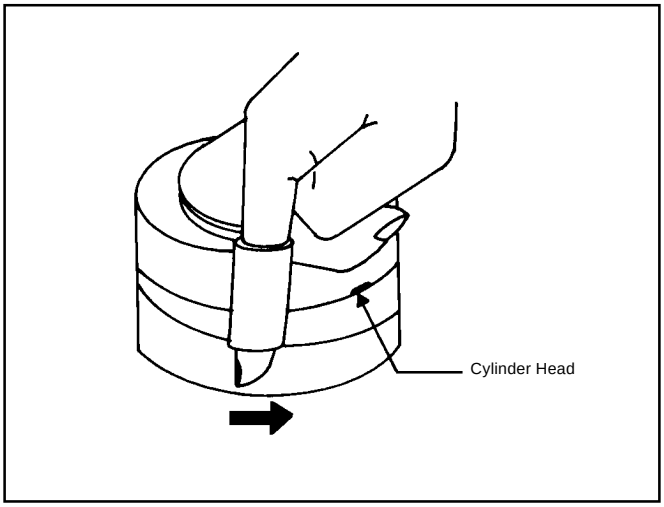
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.

2. Confirm that the ìNo Discî will be appeared on the screen.

3. Open the DVD tray.

4. Press both Channel button **(6)** on the remote control and the REC button on the set for more than 2 seconds.

5. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
   When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

6. Place the Up-Date Disc and close the tray by hand. **(Refer to SERVICING FIXTURE AND TOOLS)**

7. Automatic read will start and "CD-R UPDATE PROCESS" will be displayed on the screen.
   At this time, the horizontal noise lines may appear. But no problem.

8. Approxi. 20 seconds later, the tray will open automatically. Remove the Up-Date Disc.

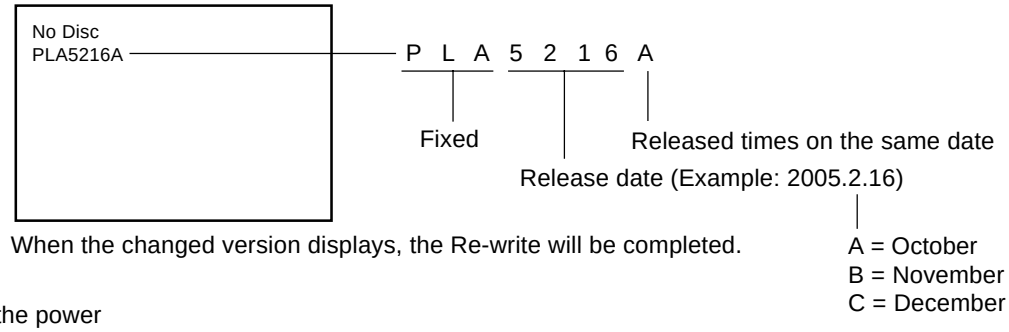
9. Then, Approxi. 40 seconds later, the above indication will disappear and the tray will close automatically.
   When the "No Disc" appears on the screen, the write will end.
   NOTE: Do not turn off the unit or push the tray by hand to close it.
   Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.

10. Unplug the AC cord, then plug it in.

11. **After the write, set to the initializing of shipping.**
    Set to the DVD mode, press both Channel button **(4)** on the remote control and the REC button on the set for more than 2 seconds.

12. The "INITIALIZE 5 ---> COMPLETE" will appear on the screen.
    Then unplug the AC cord, and plug it in.

13. **CHECK FOR THE FIRMWARE VERSION**
    Set to the DVD mode, press both Channel button **(1)** on the remote control and the STOP button on the set for more than 3 seconds.
    Firmware version will be displayed on the top left of the screen.



When the changed version displays, the Re-write will be completed.

14. Turn off the power

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: INI 32 and INI 33 cannot be set. Because, the total time for the PLAY/REC of the main unit is recorded.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0E	22	9E	60	64	64	4A	86	0B	2B	86	32	0A	C8	0A	01
10	AF	97	95	8A	00	00	31	04	88	A5	9F	3A	00	10	BF	00
20	3A	11	22	70	61	29	3A	00	0B	00	40	C5	9A	B0	00	37
30	03	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the VCR mode.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   ADDRESS and DATA will appear on TV Monitor as **Fig 1.**

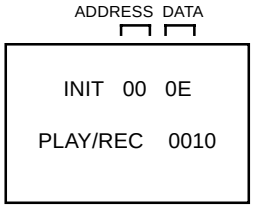


Fig. 1

4. ADDRESS is now selected and should “blink”. Using the SET + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will ìblinkî.
6. Again, step through the DATA using SET + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

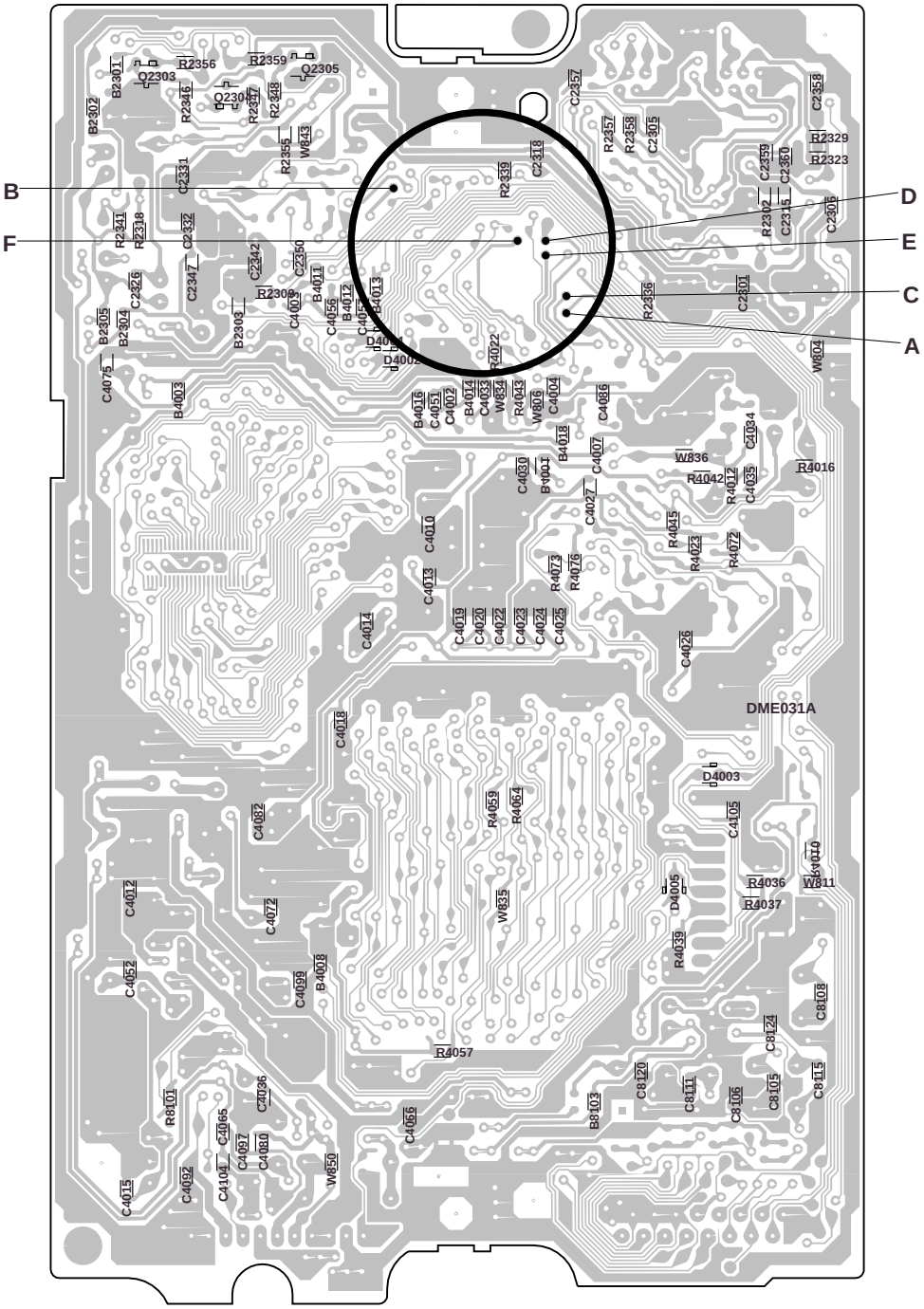
10. Turn on the POWER, and set to the VCR mode.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

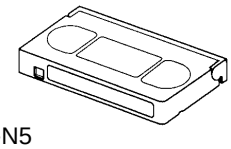
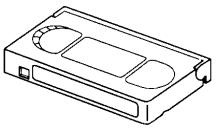
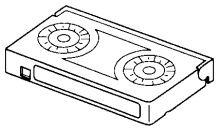
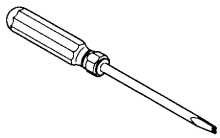
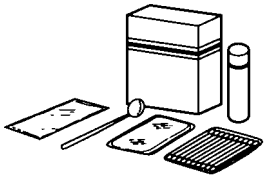
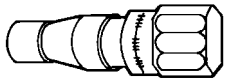
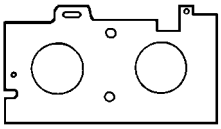
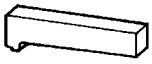
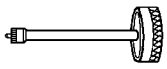
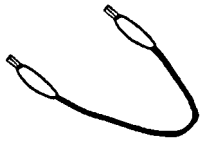
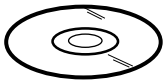
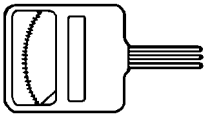
RF SIGNAL CHECK OF DVD PCB

RF signal check can be done at the following A~D resistance points on the DVD PCB.

DVD PCB (BOTTOM SIDE)



SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG176 Up-Date Disc 	JG185 Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG176	APJG176064	Up-Date Disc	Up-Date of the Firmware
JG185	APJG185000	Tentelometer	Confirmation of Tape Tension on Playback

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. While pressing the CH DOWN button on the set for more than 2 seconds, press the POWER button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.
2. Short circuit between **TP3001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

When you servicing with connection of DVD, perform the operations above step 2 to step 3.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

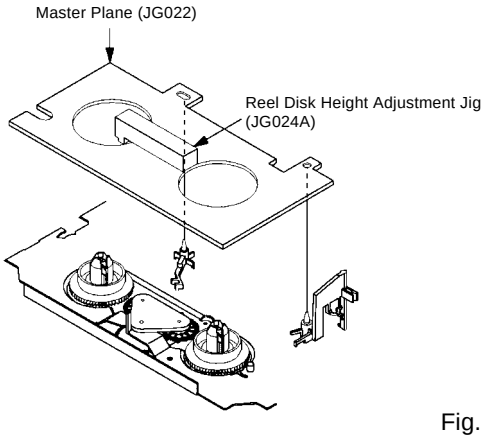


Fig. 1-1-A

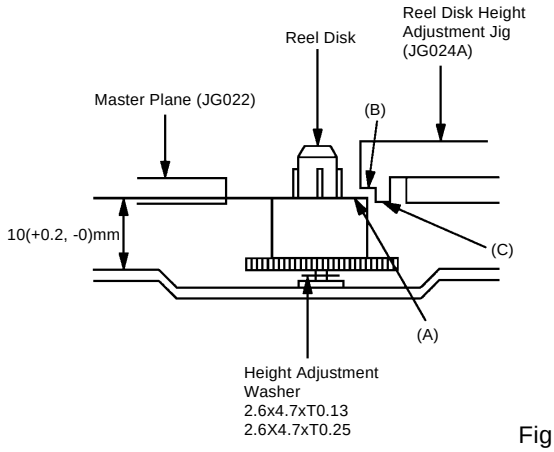


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

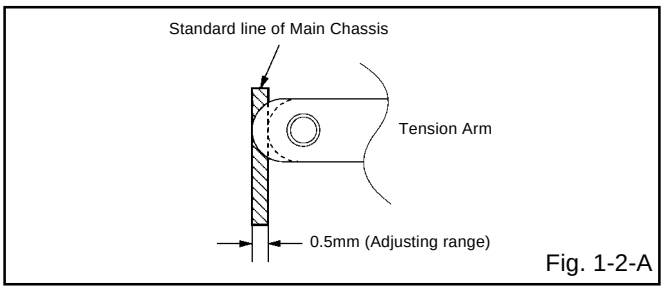


Fig. 1-2-A

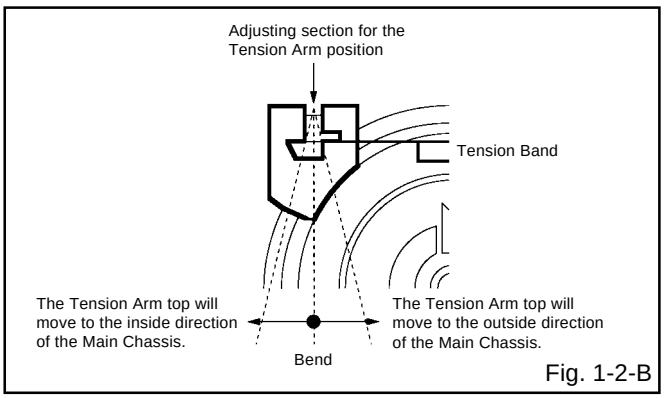


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer (JG185) as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

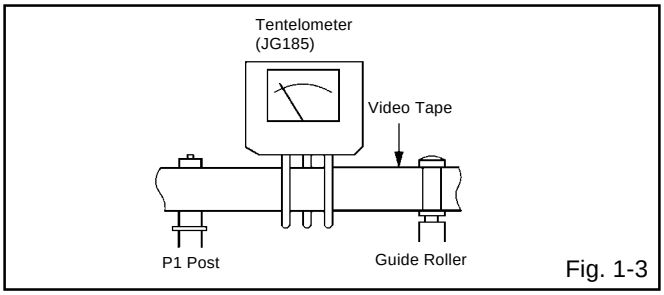


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

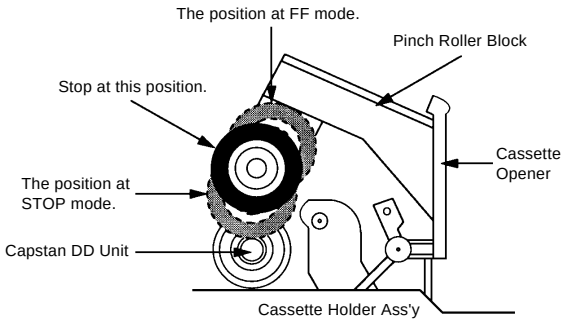


Fig. 1-4-A

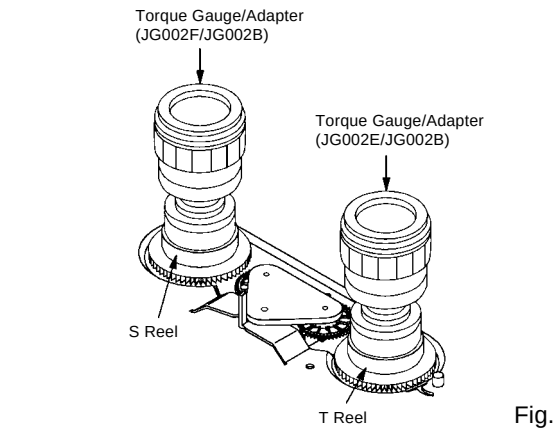


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Connect CH-1 of the oscilloscope to **TP101 (Envelope)** and CH-2 to **TP3002 (SW Pulse)**.
3. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
5. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
6. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

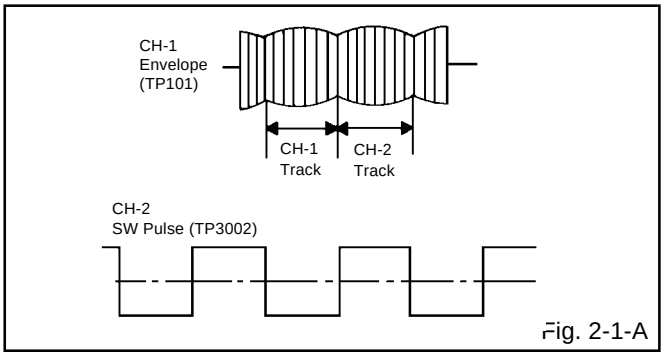


Fig. 2-1-A

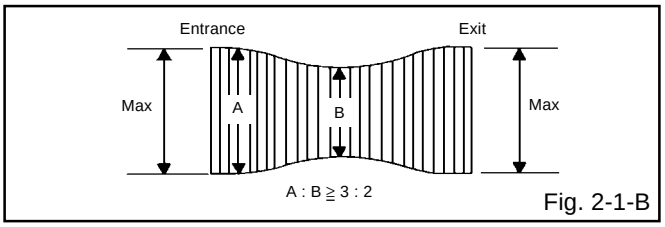


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

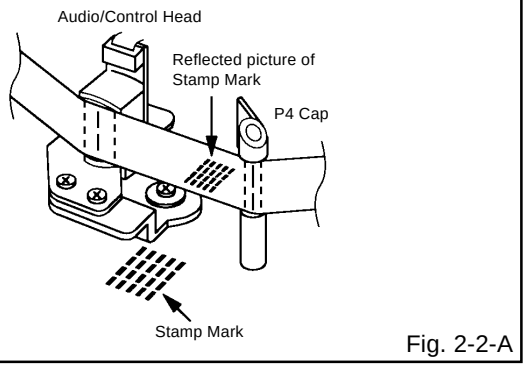


Fig. 2-2-A

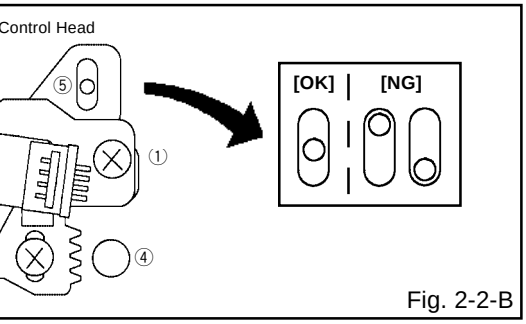


Fig. 2-2-B

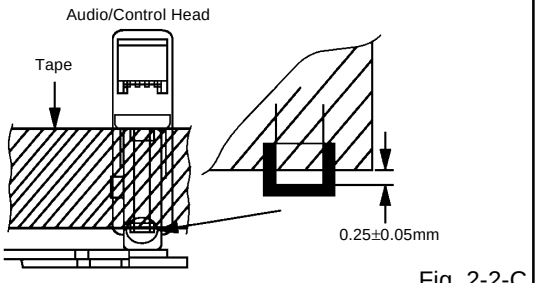


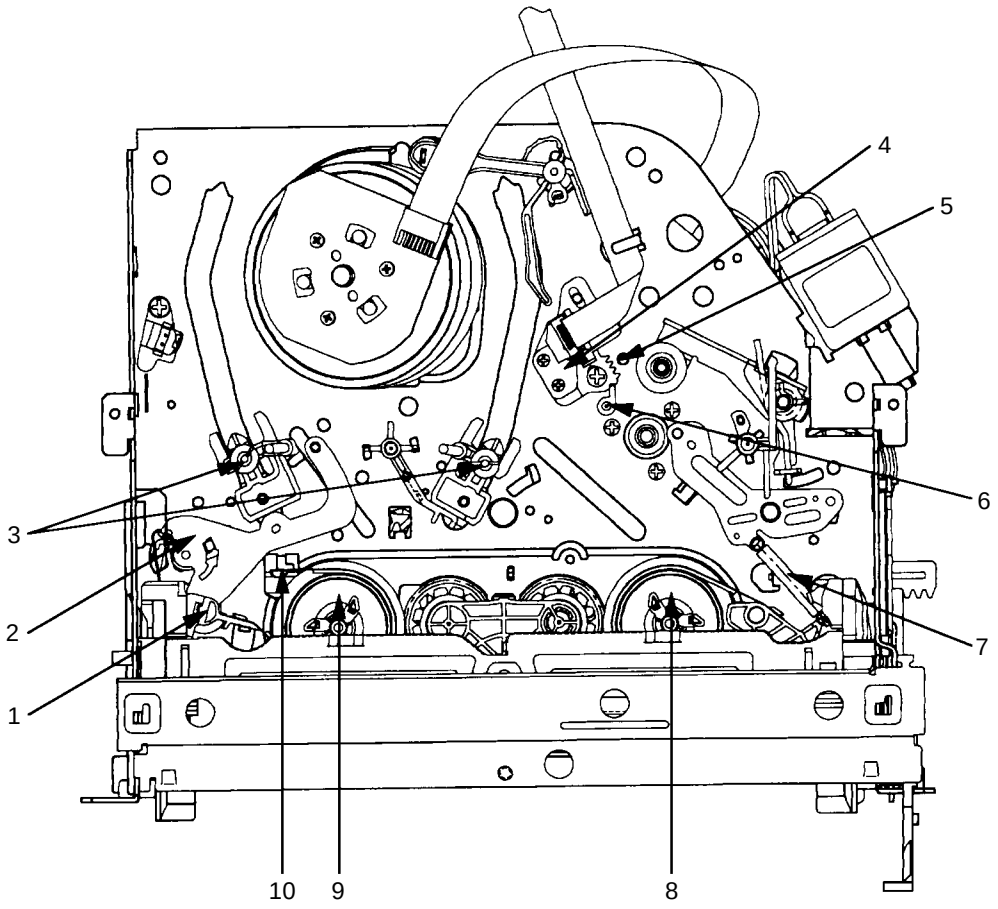
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP3002** and CH-2 to **TP101**.
6. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Then, check if the ⑤ section of **Fig. 2-2-B** is on the center position (or rather to the cylinder side). In case of the envelope maximum at the difference position from the center, adjust the matching of picture and sound again.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **Video Out Jack**.
2. Playback the alignment tape.
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

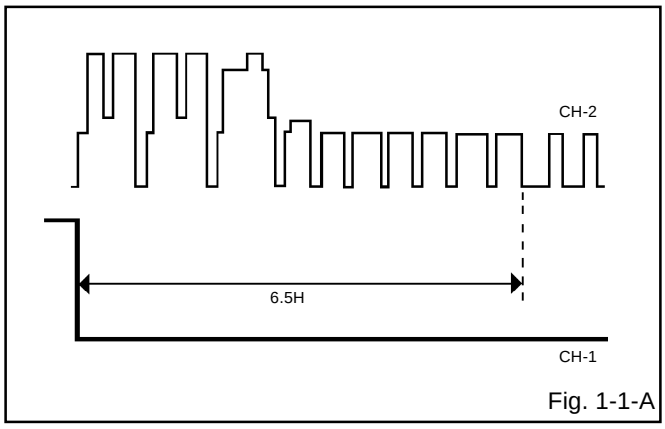


Fig. 1-1-A

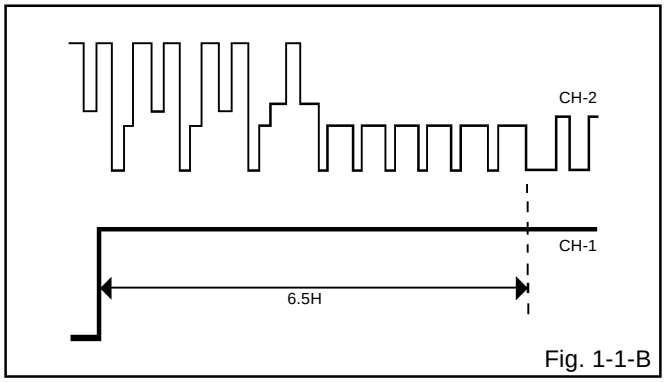
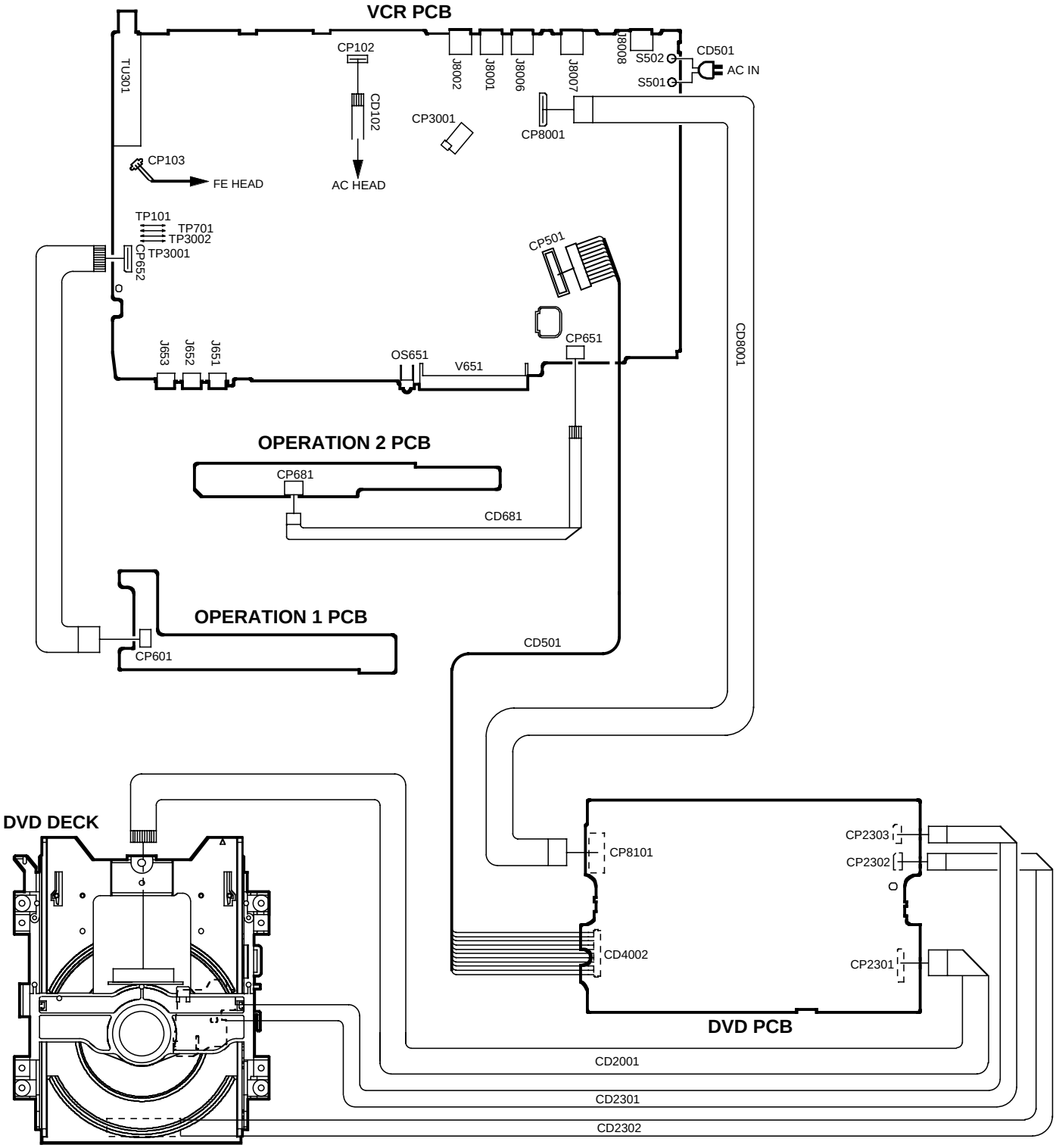


Fig. 1-1-B

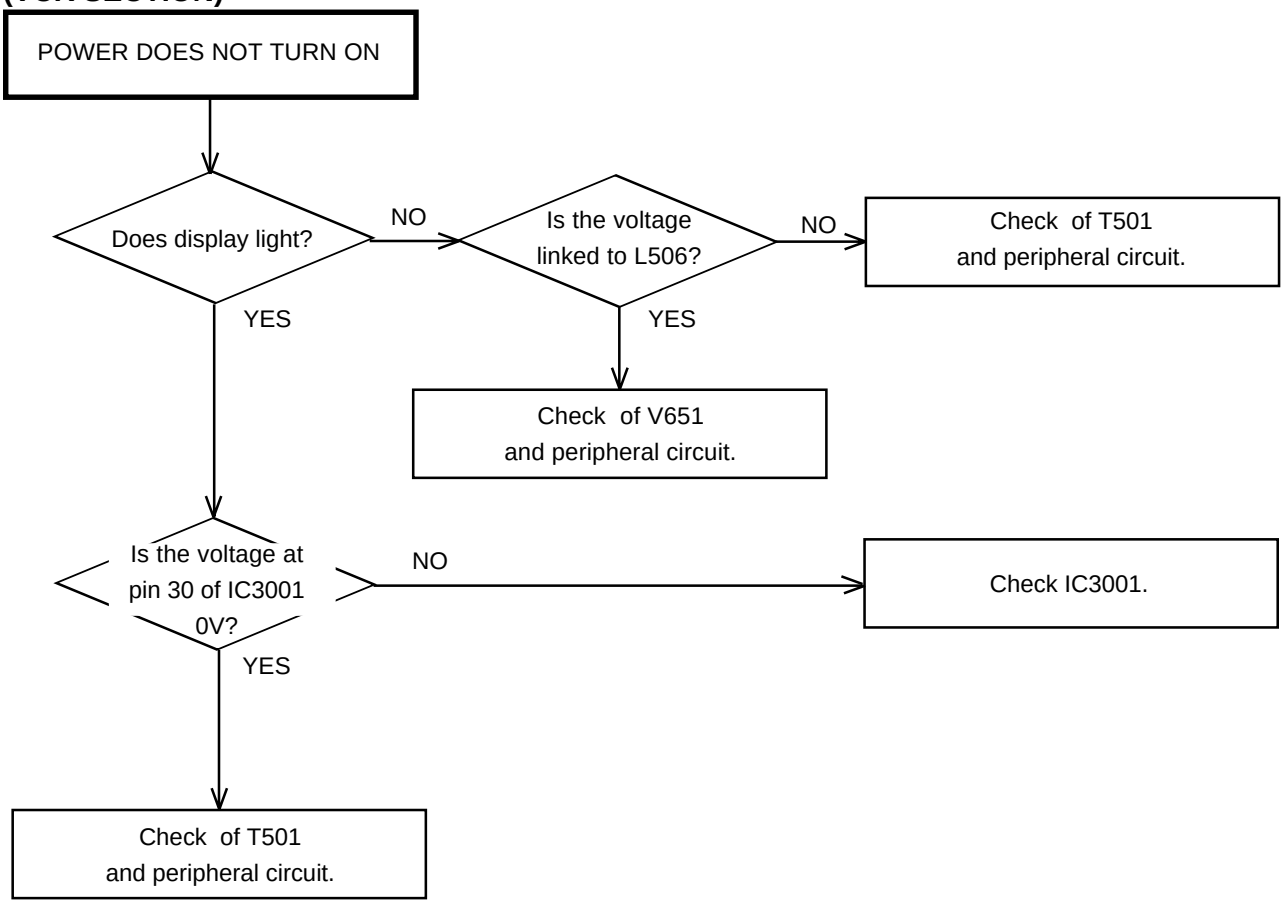
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

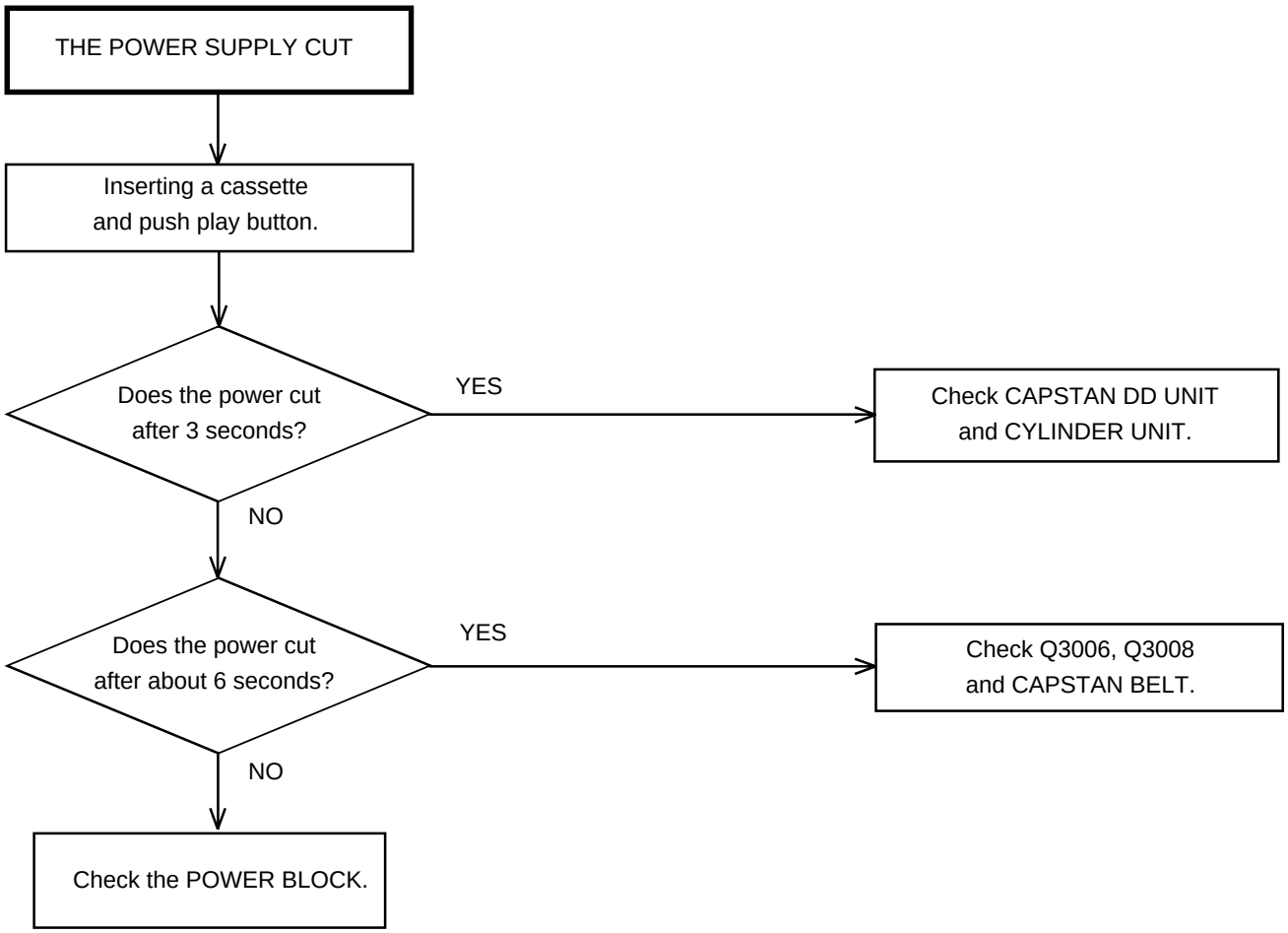


TROUBLESHOOTING GUIDE

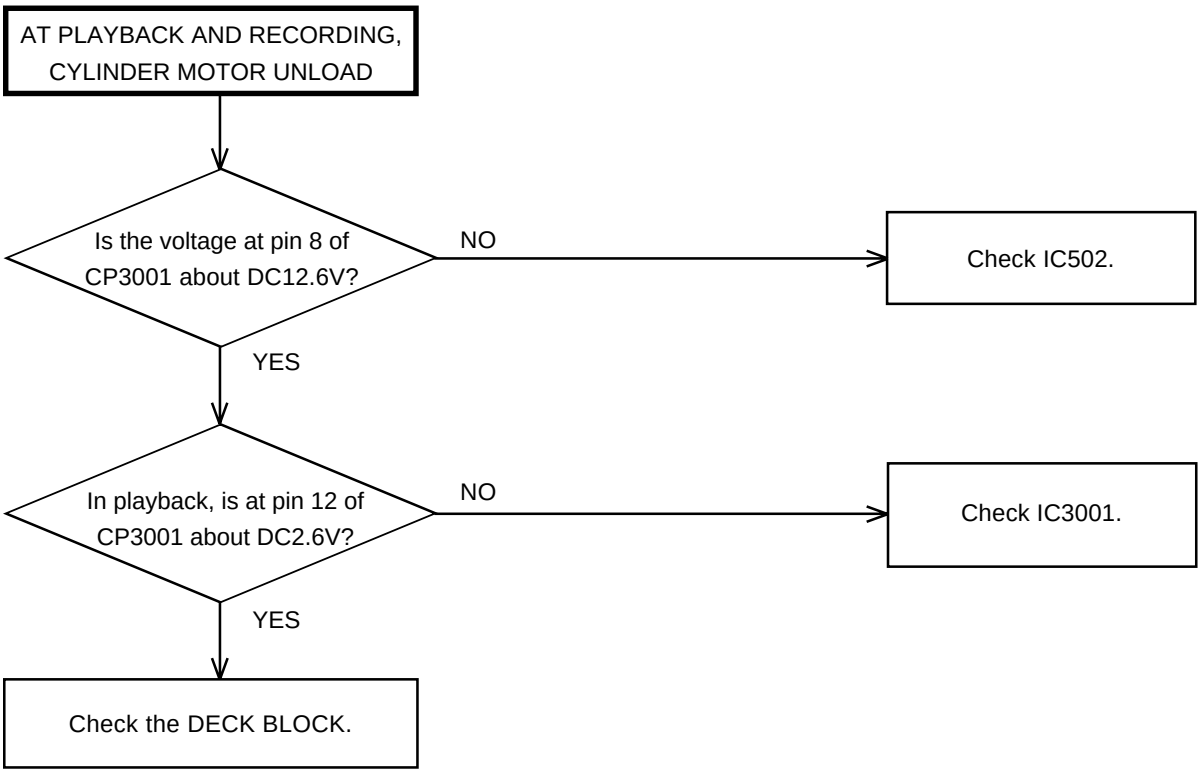
(VCR SECTION)



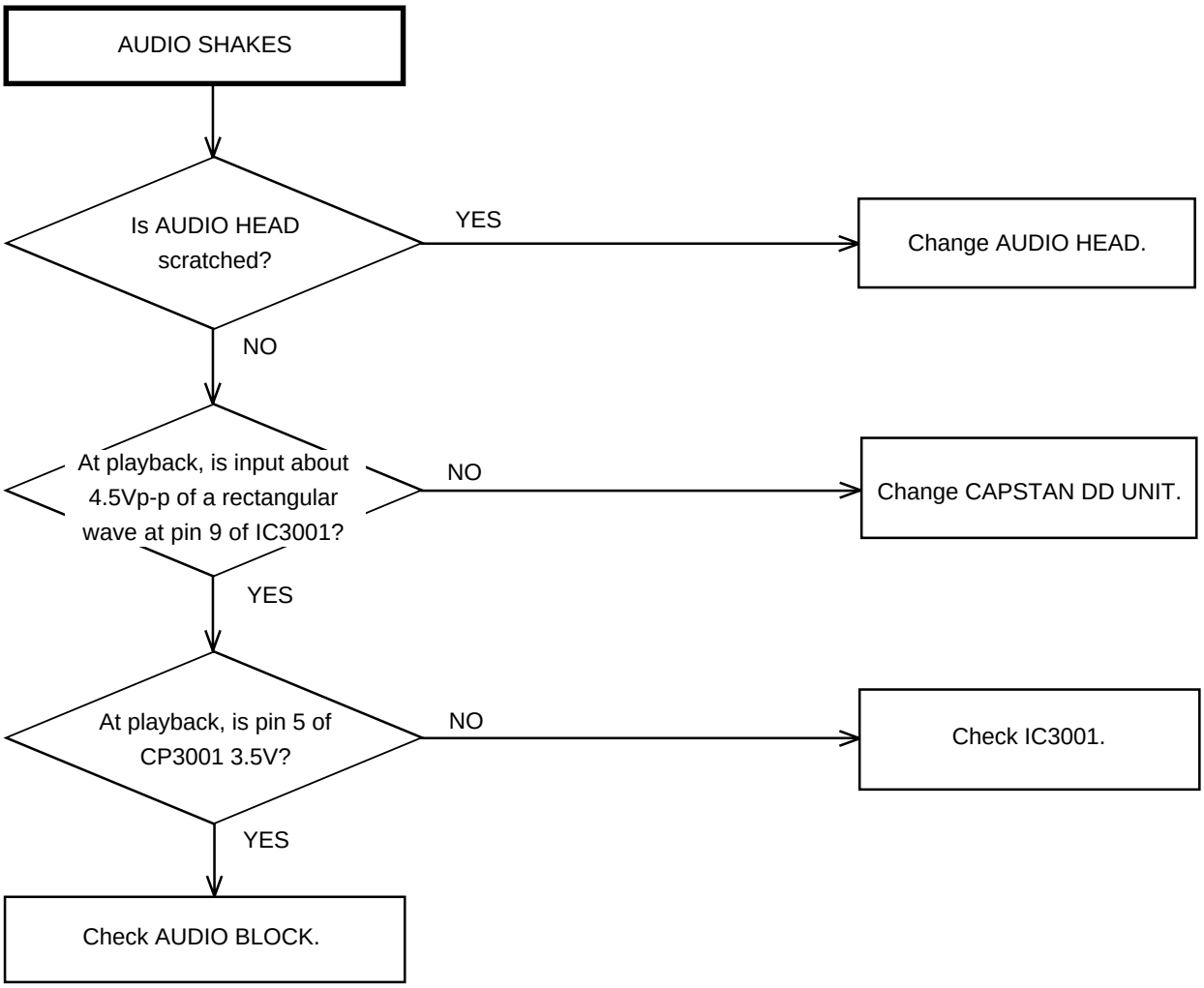
TROUBLESHOOTING GUIDE



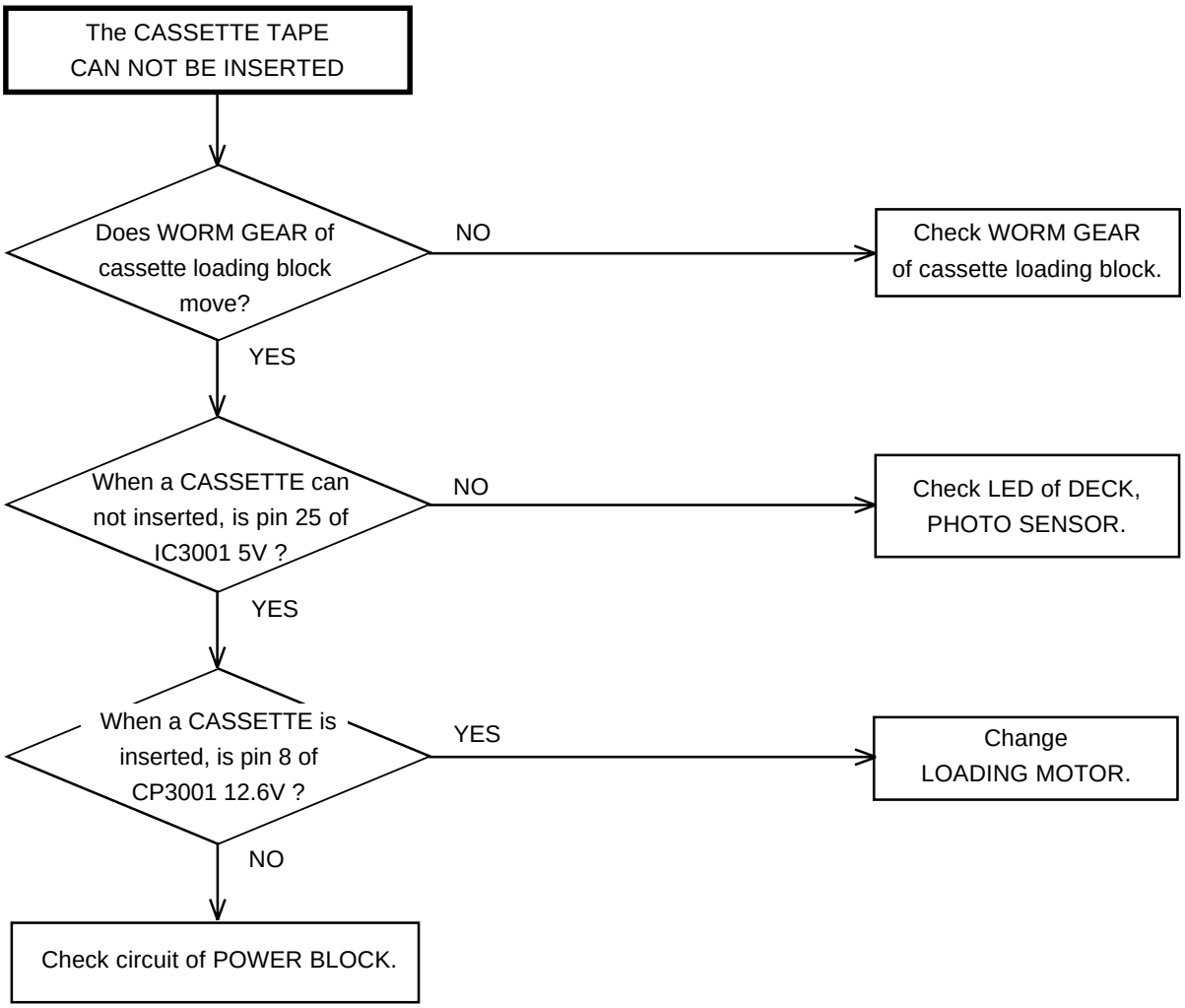
TROUBLESHOOTING GUIDE



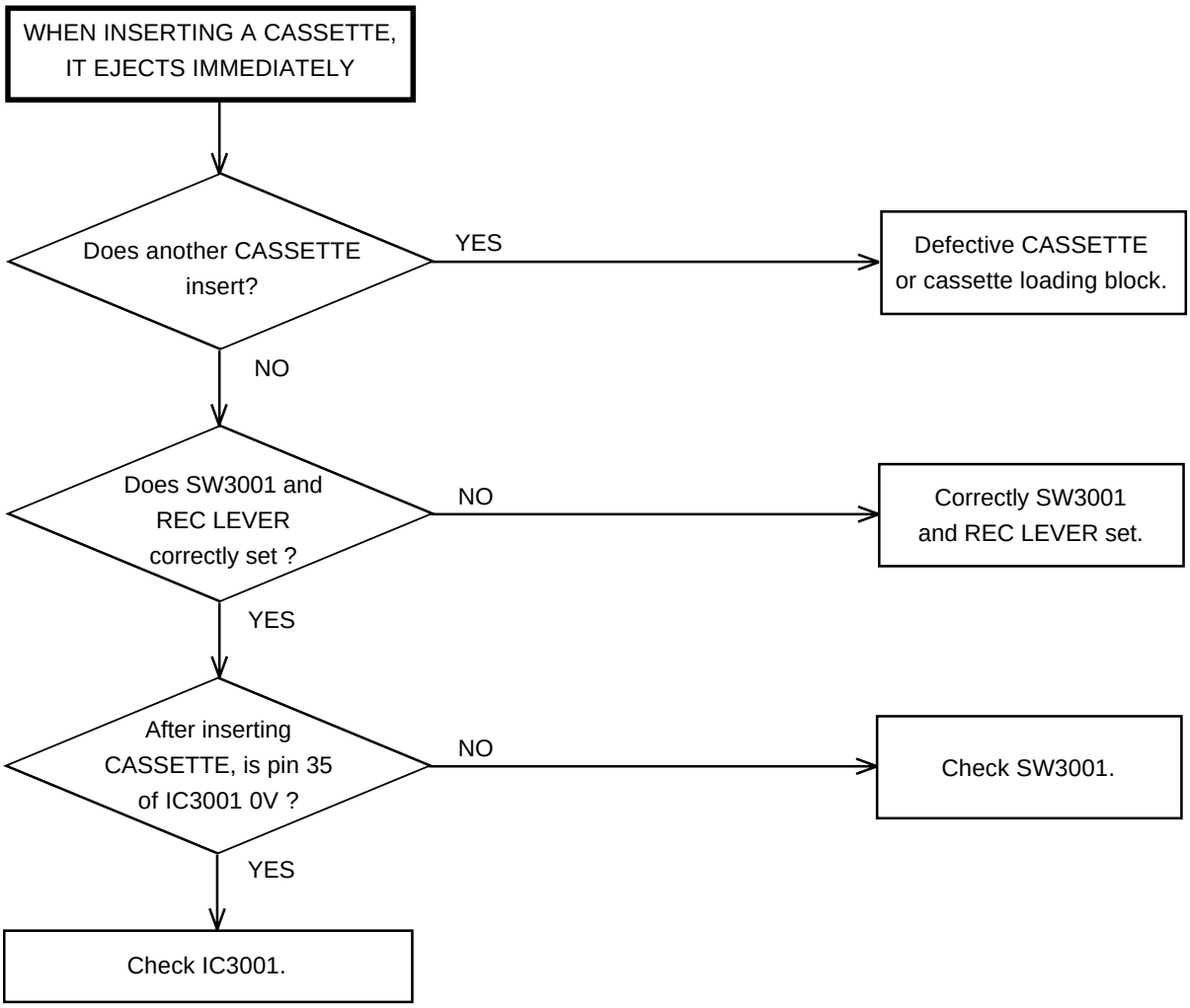
TROUBLESHOOTING GUIDE



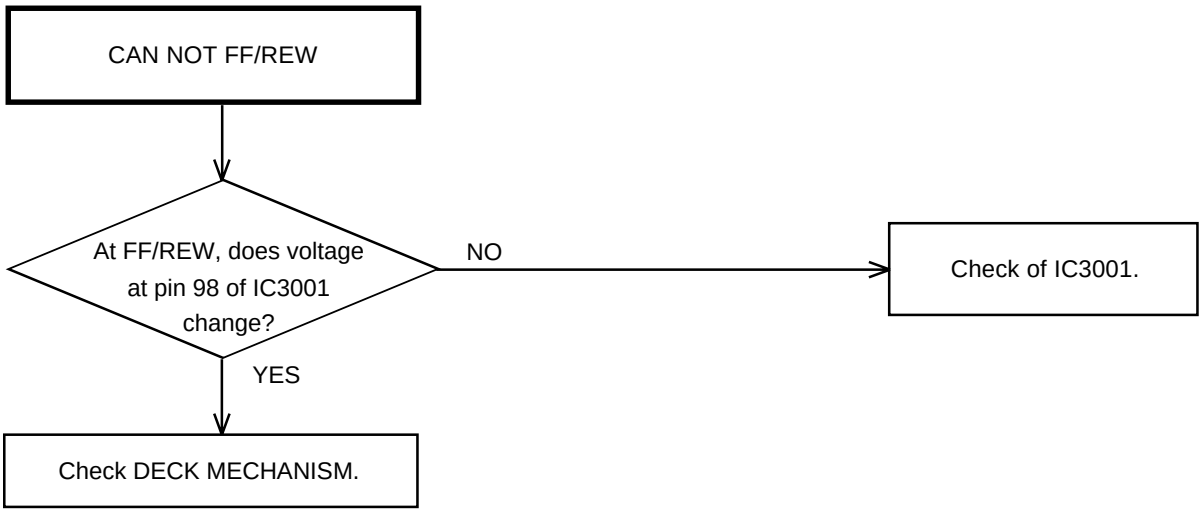
TROUBLESHOOTING GUIDE


The CASSETTE TAPE
CAN NOT BE INSERTED
Does WORM GEAR of cassette loading block move?
NO
Check WORM GEAR of cassette loading block.
YES
When a CASSETTE can not inserted, is pin 25 of IC3001 5V ?
NO
Check LED of DECK, PHOTO SENSOR.
YES
When a CASSETTE is inserted, is pin 8 of CP3001 12.6V ?
YES
Change LOADING MOTOR.
NO
Check circuit of POWER BLOCK.

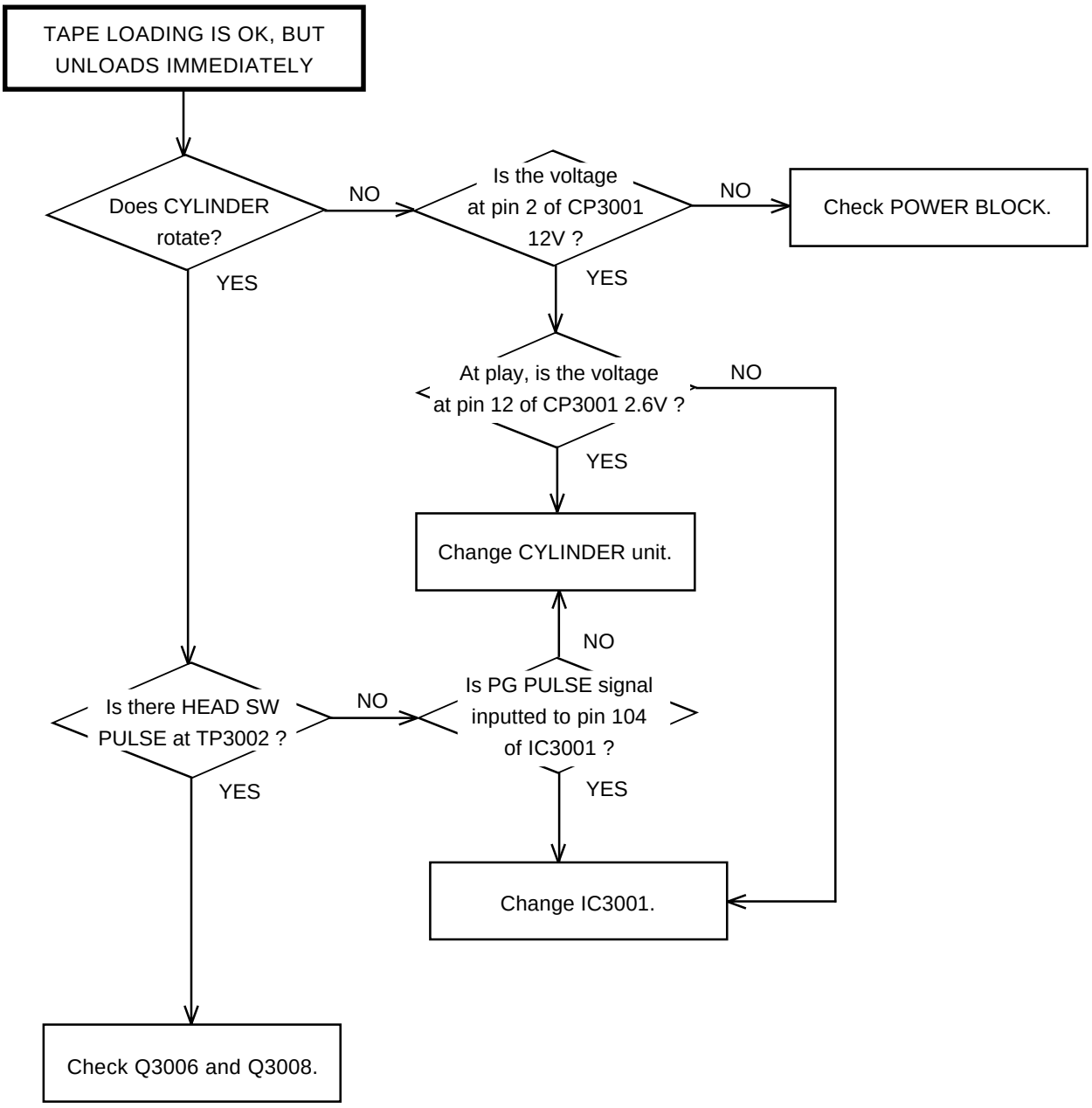
TROUBLESHOOTING GUIDE



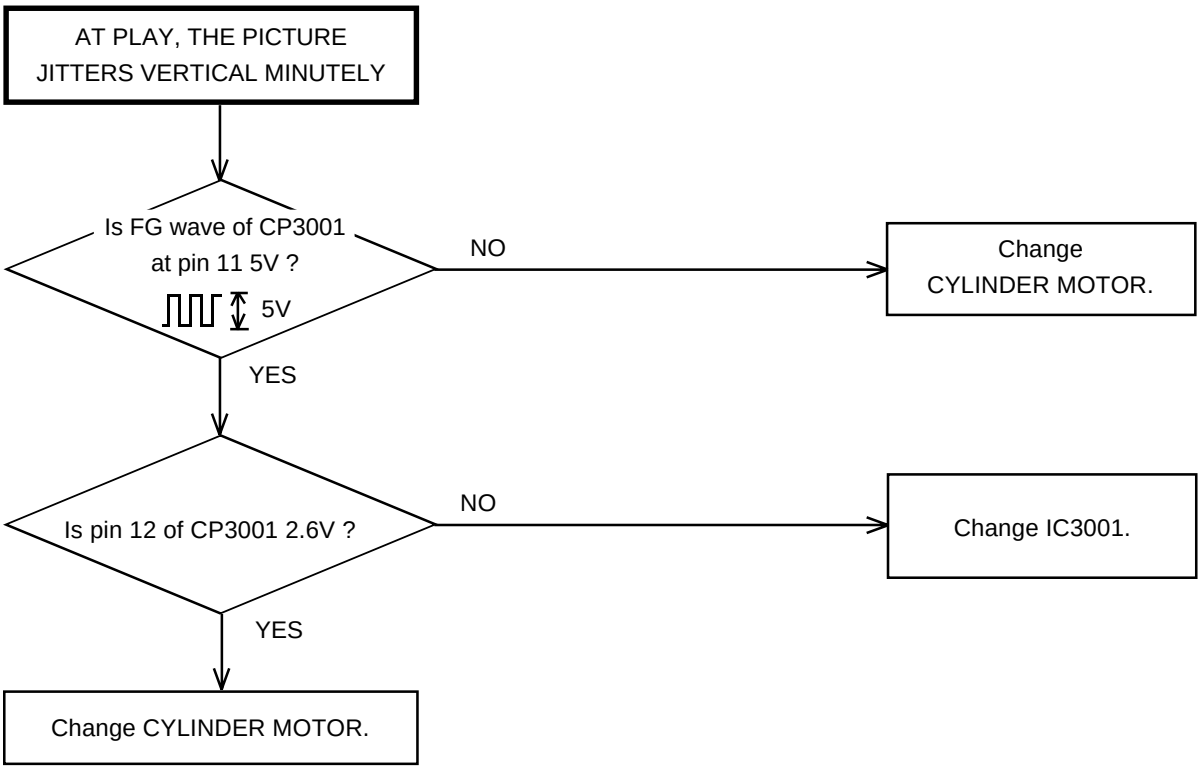
TROUBLESHOOTING GUIDE



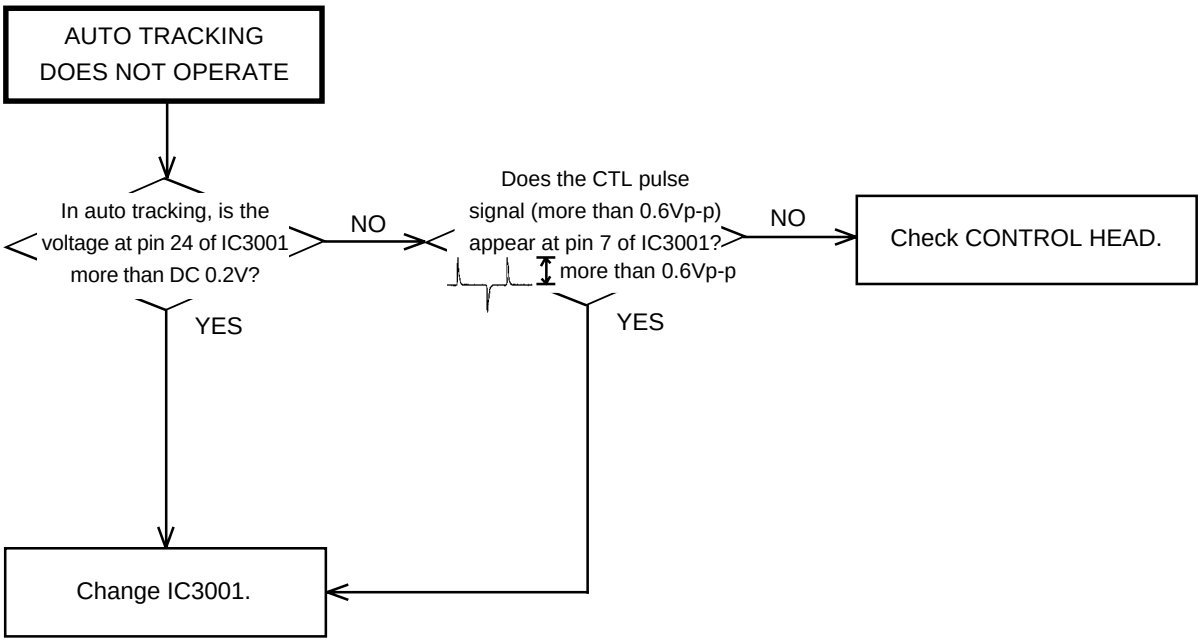
TROUBLESHOOTING GUIDE



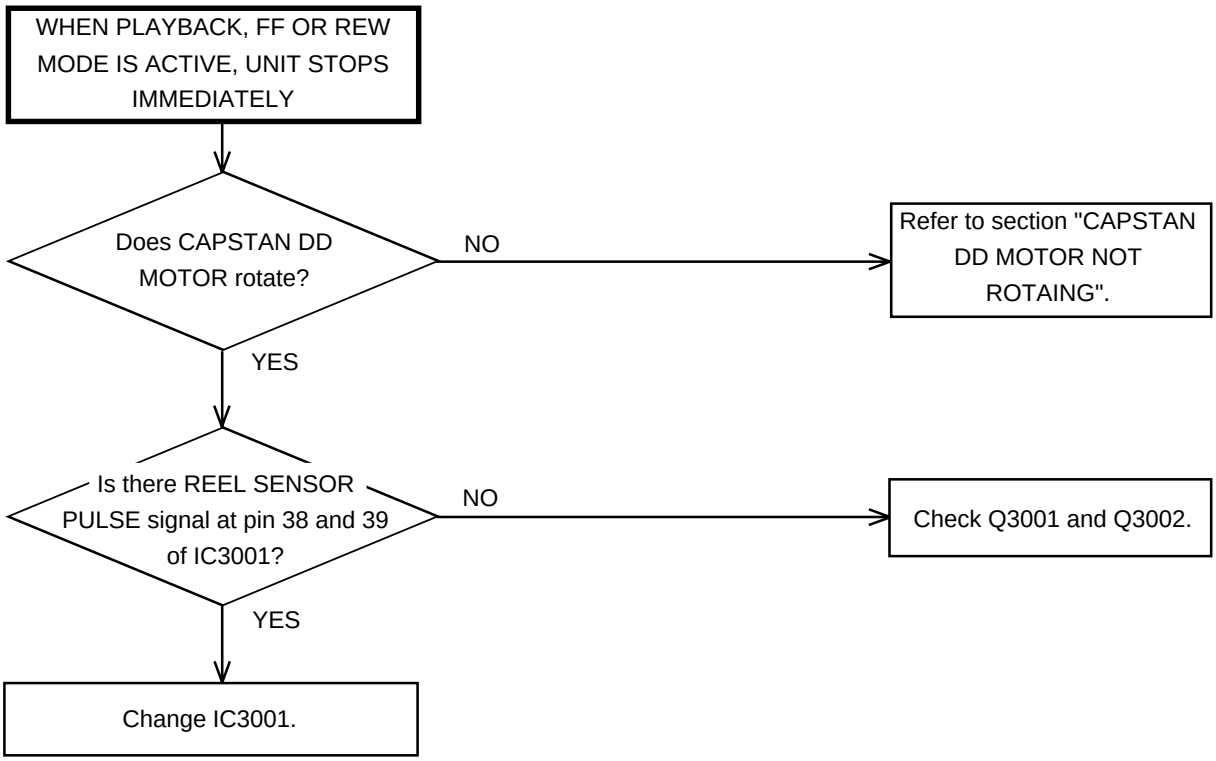
TROUBLESHOOTING GUIDE



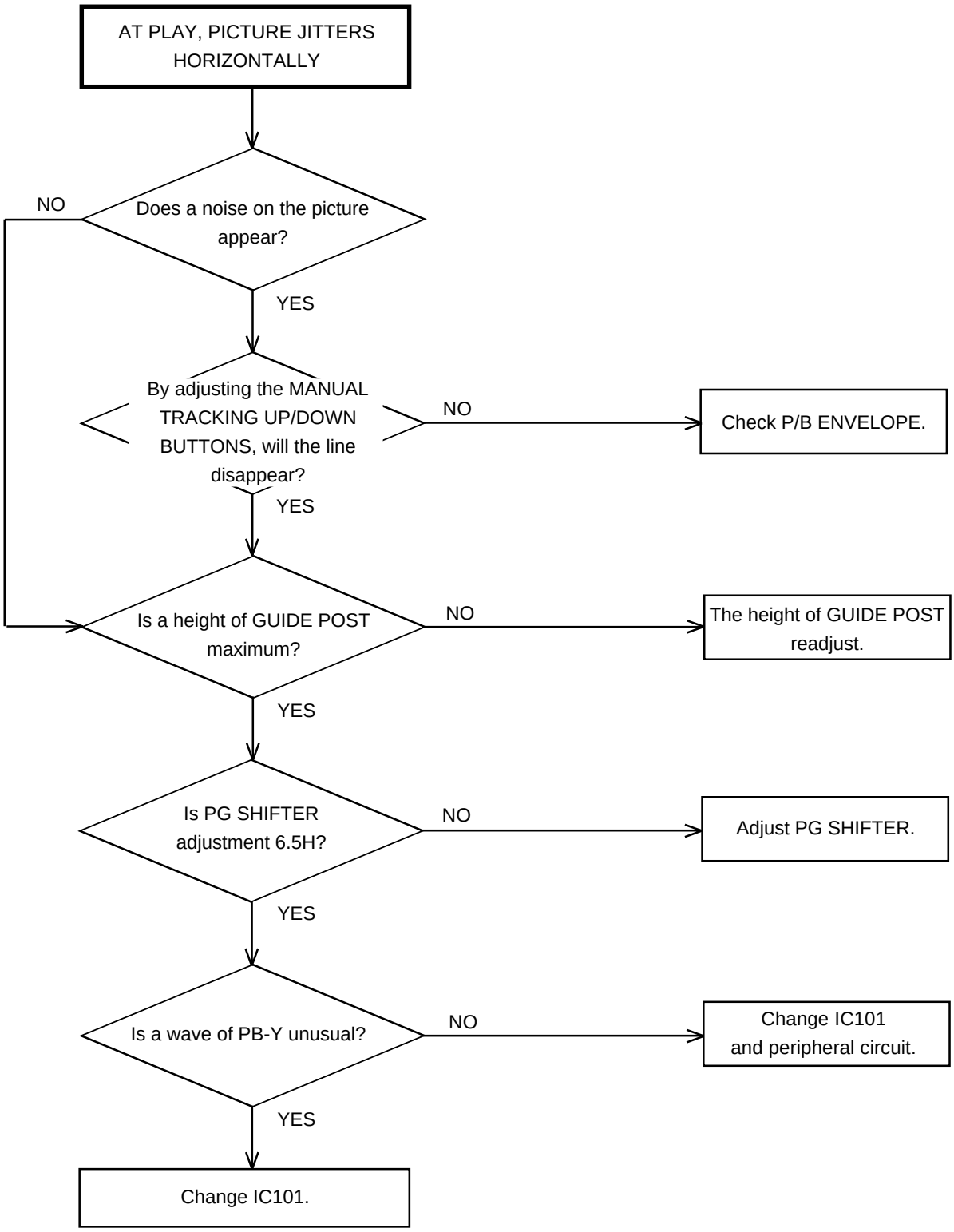
TROUBLESHOOTING GUIDE



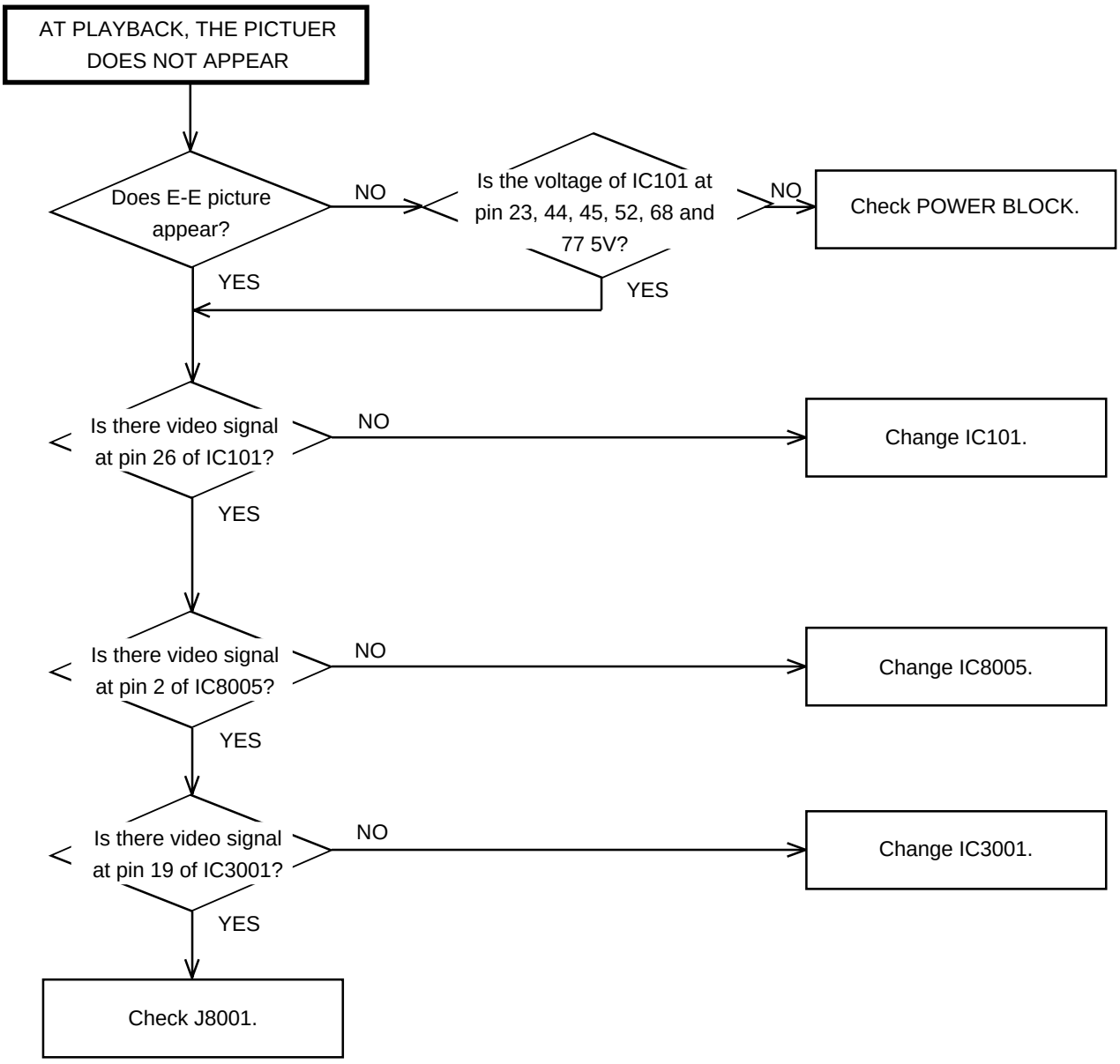
TROUBLESHOOTING GUIDE


WHEN PLAYBACK, FF OR REW MODE IS ACTIVE, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
NO
Refer to section "CAPSTAN DD MOTOR NOT ROTAING".
YES
Is there REEL SENSOR PULSE signal at pin 38 and 39 of IC3001?
NO
Check Q3001 and Q3002.
YES
Change IC3001.

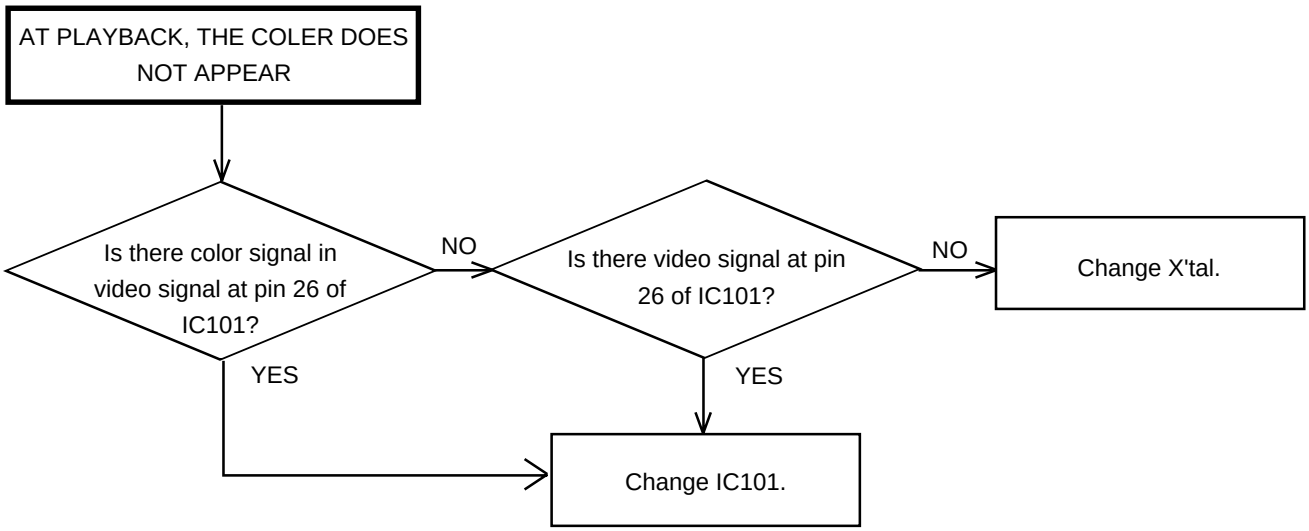
TROUBLESHOOTING GUIDE



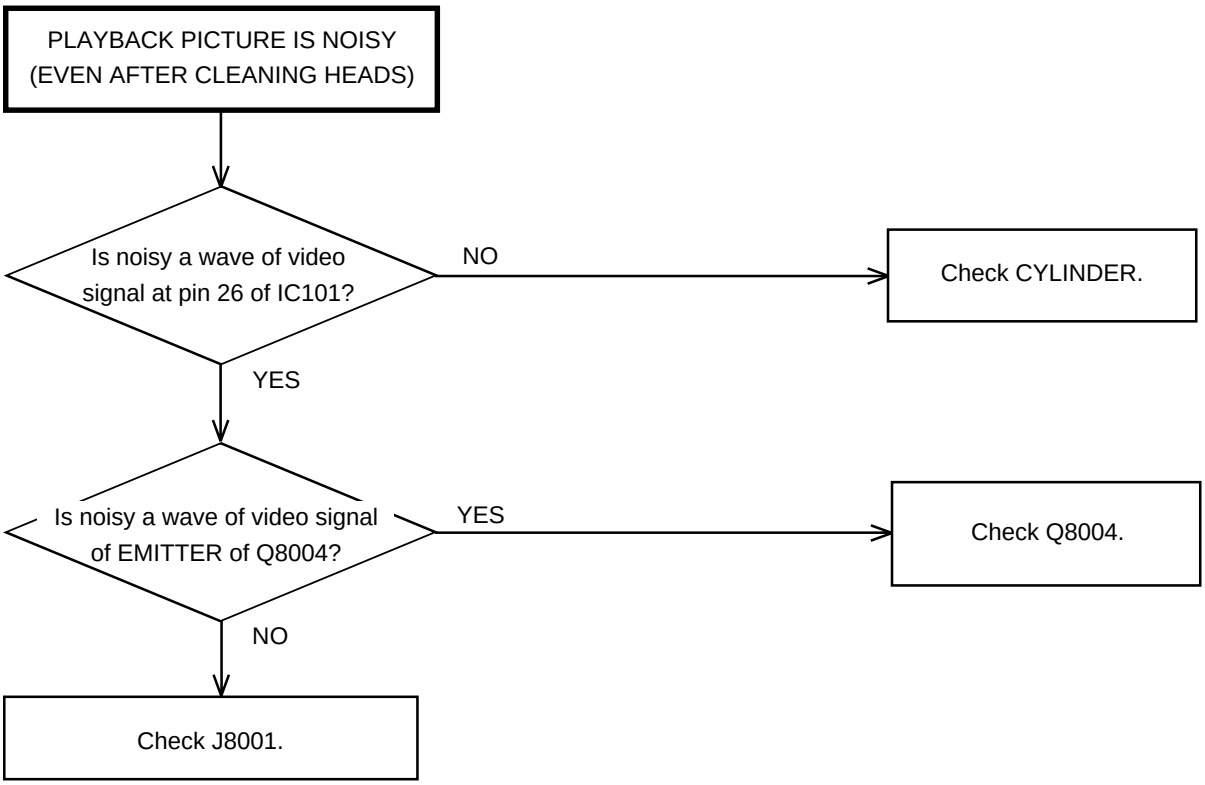
TROUBLESHOOTING GUIDE



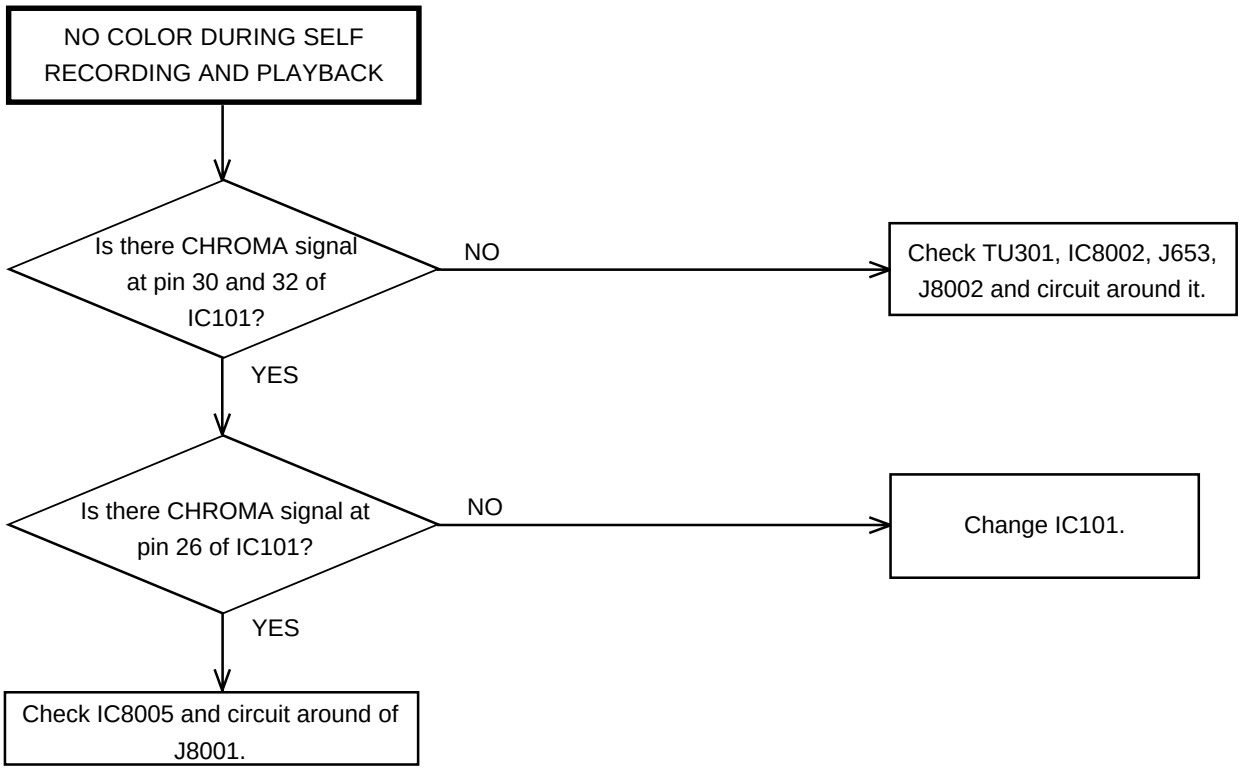
TROUBLESHOOTING GUIDE


AT PLAYBACK, THE COLER DOES NOT APPEAR
Is there color signal in video signal at pin 26 of IC101?
NO
Is there video signal at pin 26 of IC101?
NO
Change X'tal.
YES
YES
Change IC101.

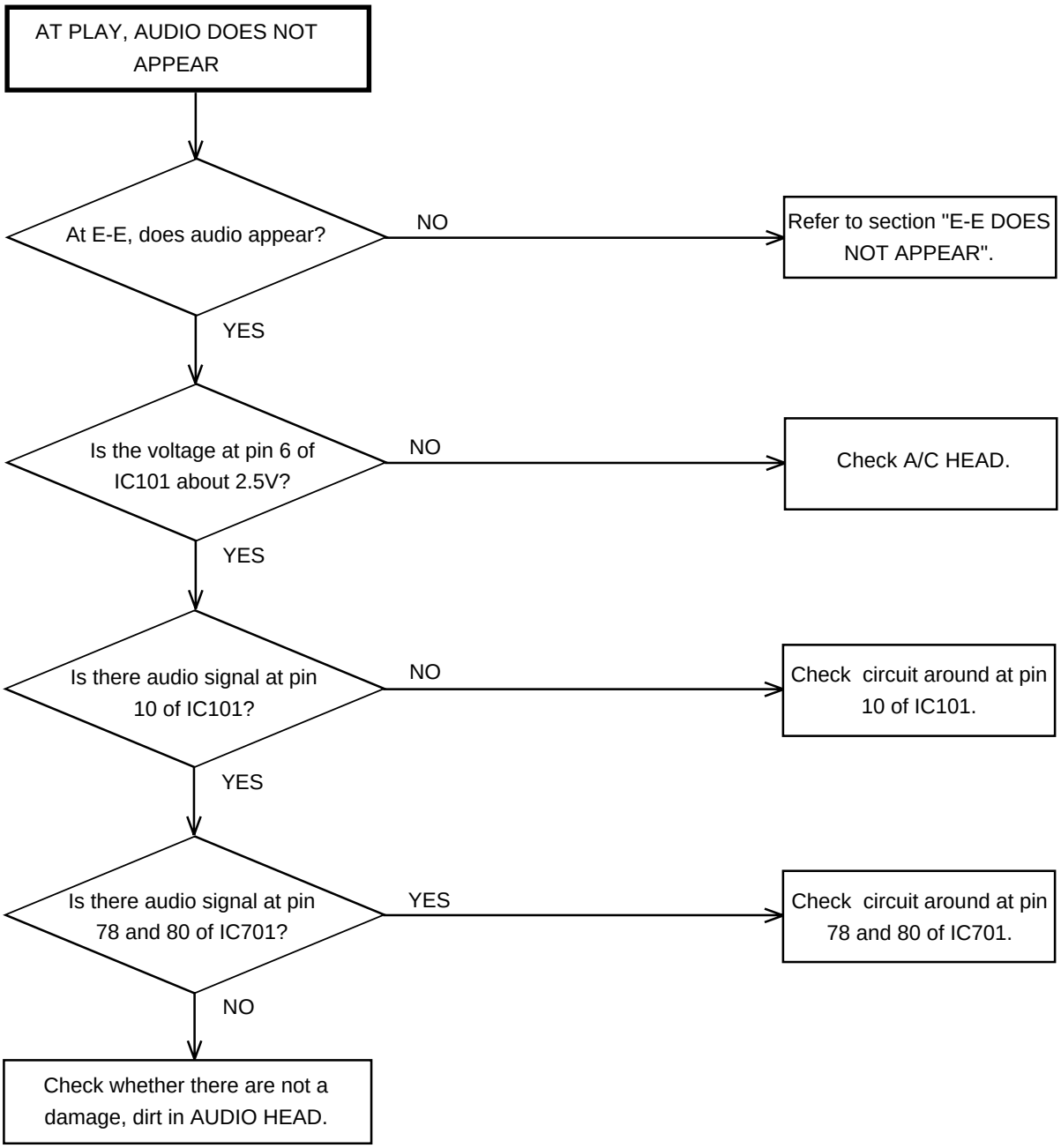
TROUBLESHOOTING GUIDE



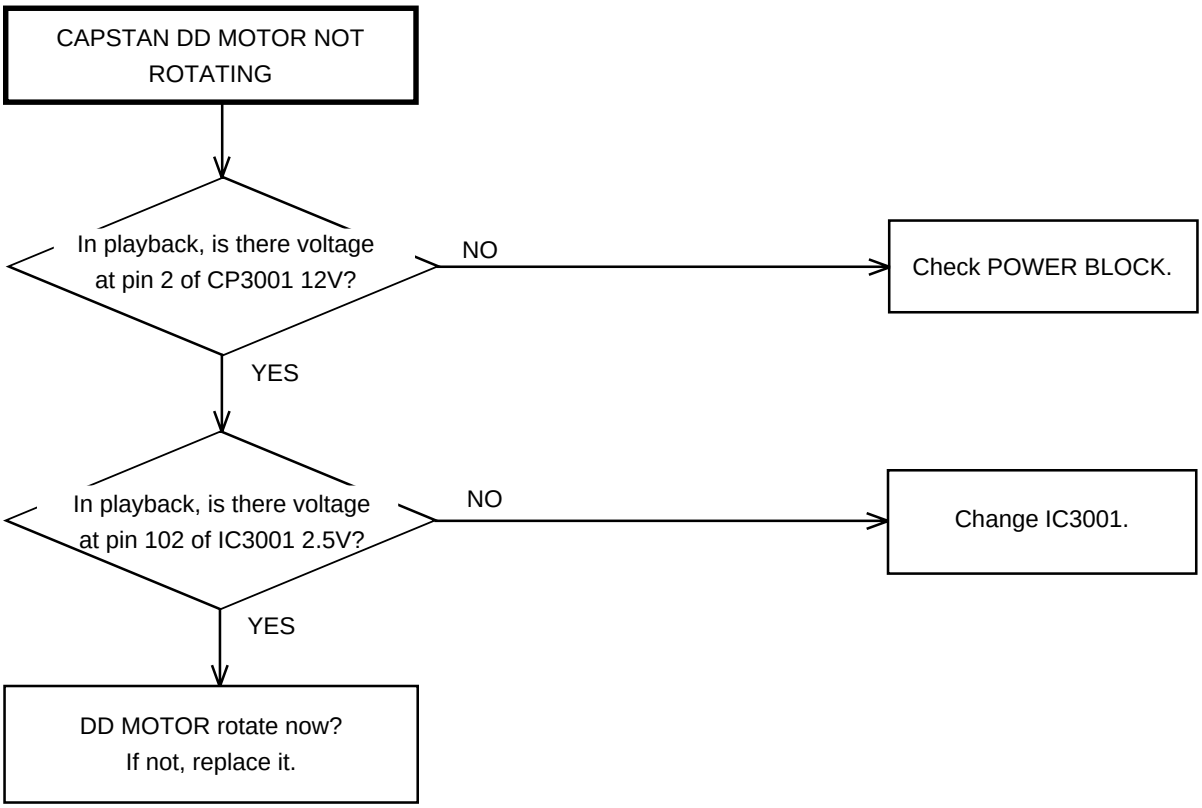
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Is there CHROMA signal at pin 30 and 32 of IC101?
NO
Check TU301, IC8002, J653, J8002 and circuit around it.
YES
Is there CHROMA signal at pin 26 of IC101?
NO
Change IC101.
YES
Check IC8005 and circuit around of J8001.

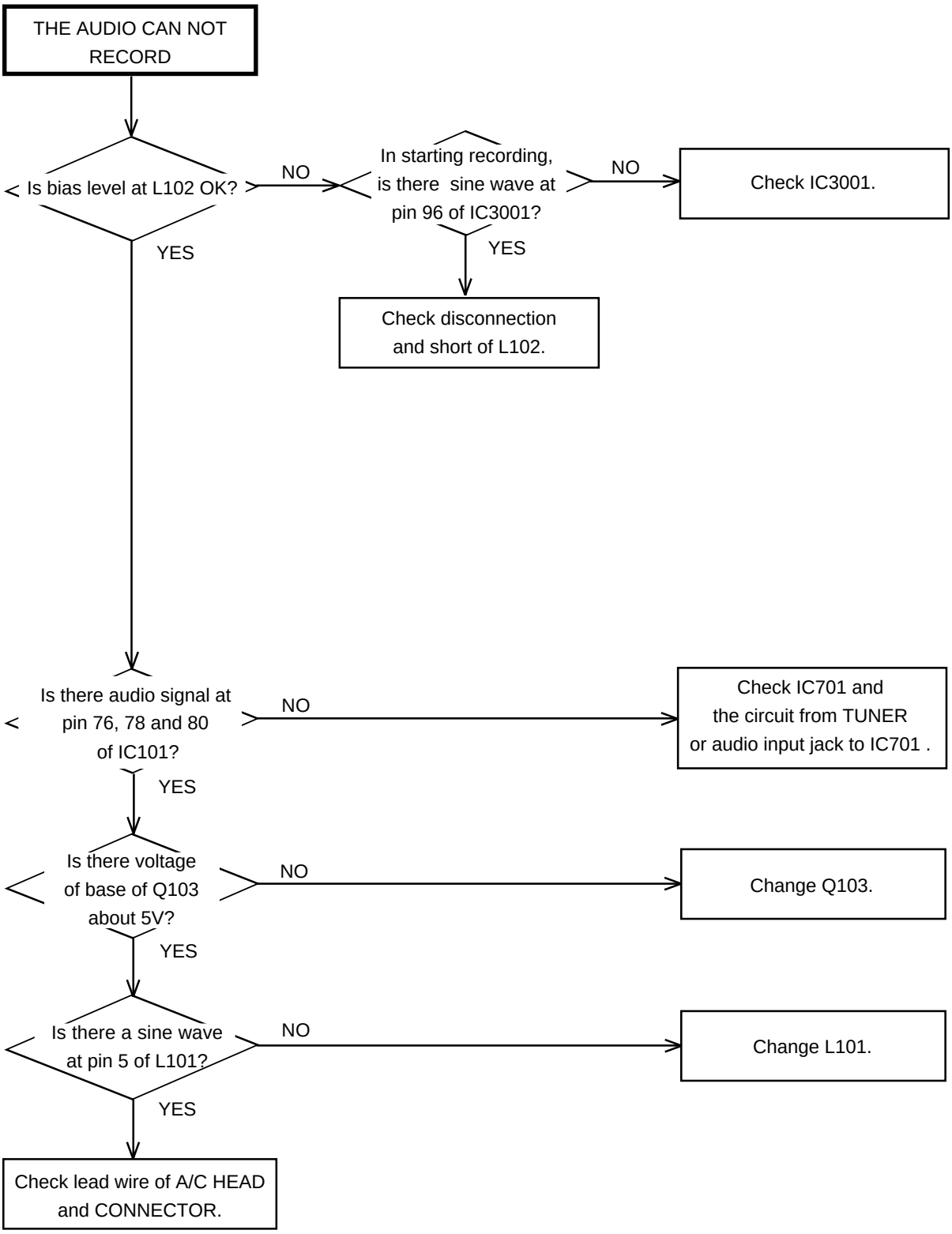
TROUBLESHOOTING GUIDE


AT PLAY, AUDIO DOES NOT APPEAR
At E-E, does audio appear?
NO
Refer to section "E-E DOES NOT APPEAR".
YES
Is the voltage at pin 6 of IC101 about 2.5V?
NO
Check A/C HEAD.
YES
Is there audio signal at pin 10 of IC101?
NO
Check circuit around at pin 10 of IC101.
YES
Is there audio signal at pin 78 and 80 of IC701?
YES
Check circuit around at pin 78 and 80 of IC701.
NO
Check whether there are not a damage, dirt in AUDIO HEAD.

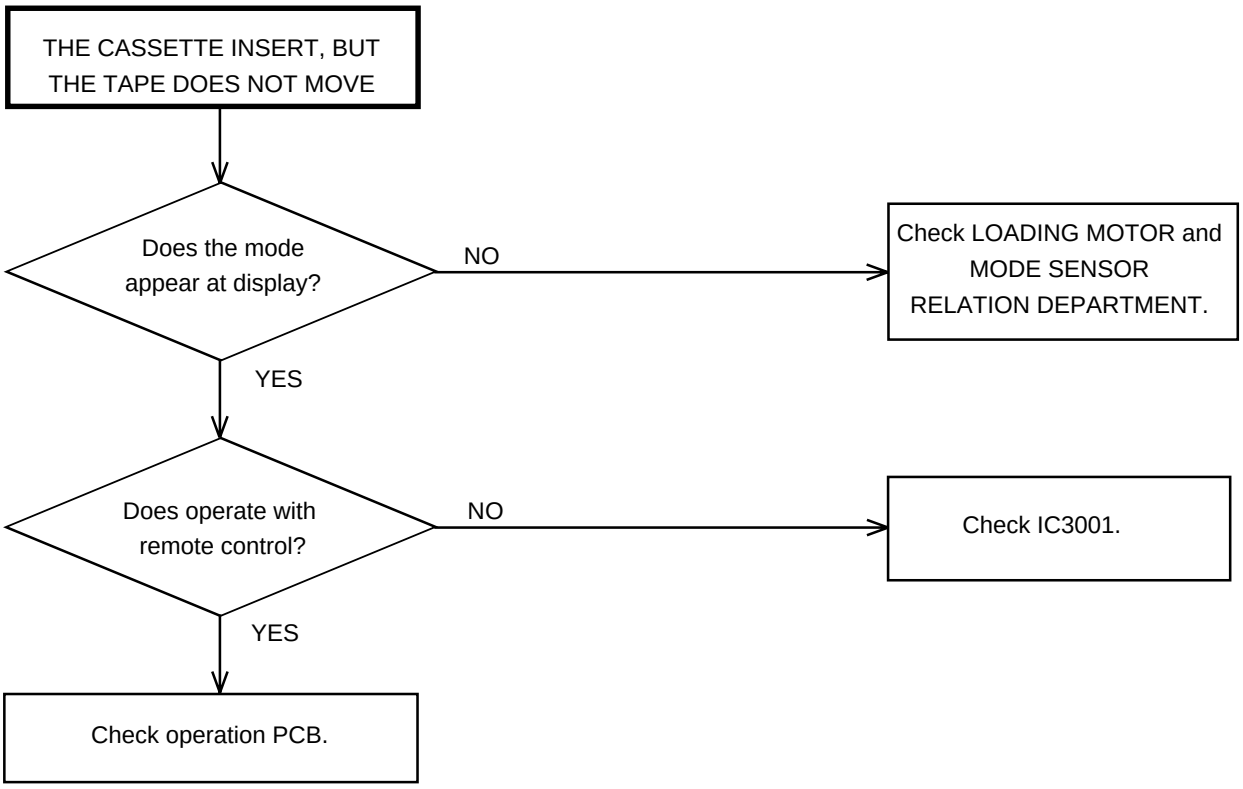
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback, is there voltage at pin 2 of CP3001 12V?
NO
Check POWER BLOCK.
YES
In playback, is there voltage at pin 102 of IC3001 2.5V?
NO
Change IC3001.
YES
DD MOTOR rotate now? If not, replace it.

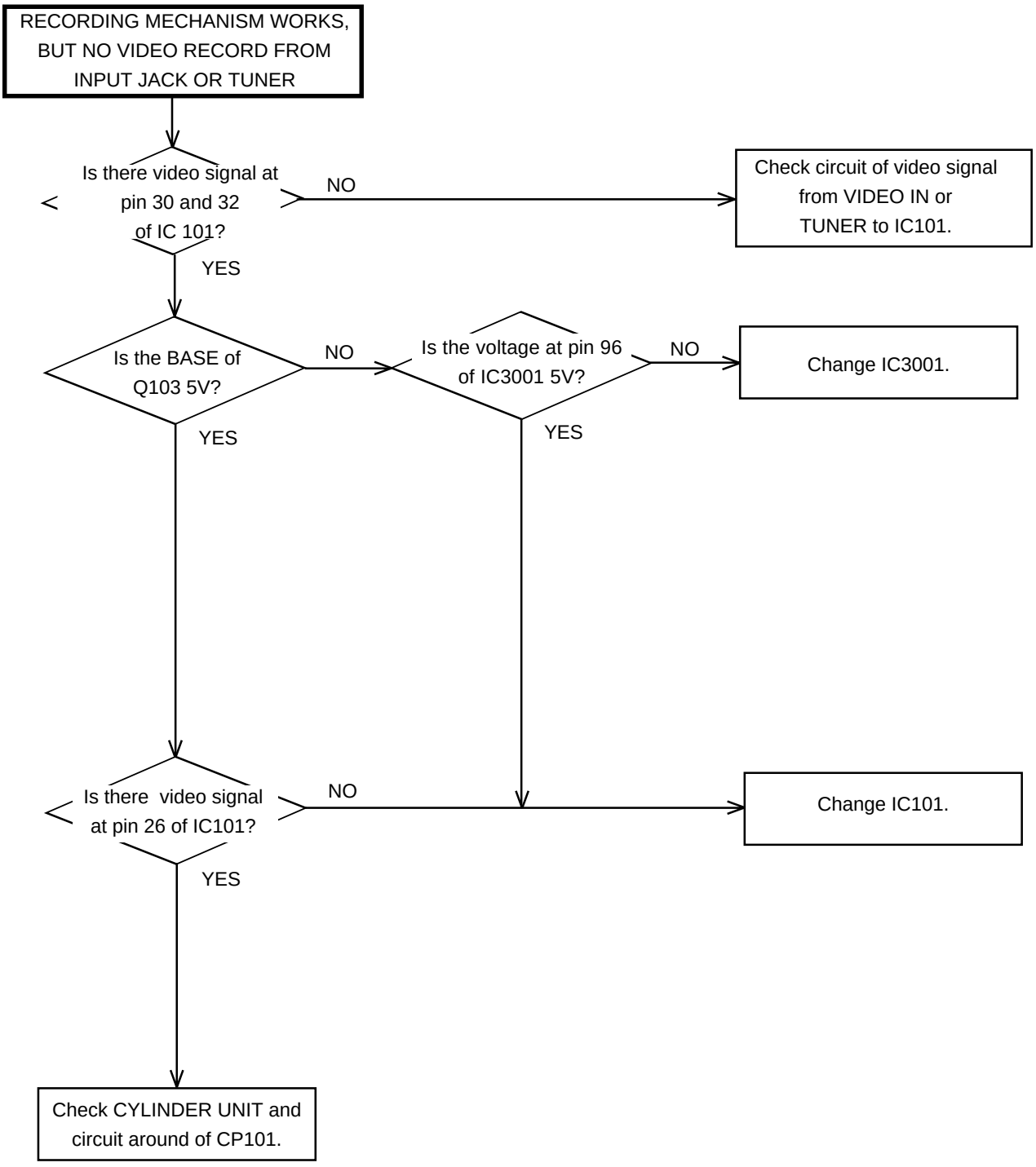
TROUBLESHOOTING GUIDE


THE AUDIO CAN NOT RECORD
Is bias level at L102 OK?
NO
In starting recording, is there sine wave at pin 96 of IC3001?
NO
Check IC3001.
YES
YES
Check disconnection and short of L102.
Is there audio signal at pin 76, 78 and 80 of IC101?
NO
Check IC701 and the circuit from TUNER or audio input jack to IC701 .
YES
Is there voltage of base of Q103 about 5V?
NO
Change Q103.
YES
Is there a sine wave at pin 5 of L101?
NO
Change L101.
YES
Check lead wire of A/C HEAD and CONNECTOR.

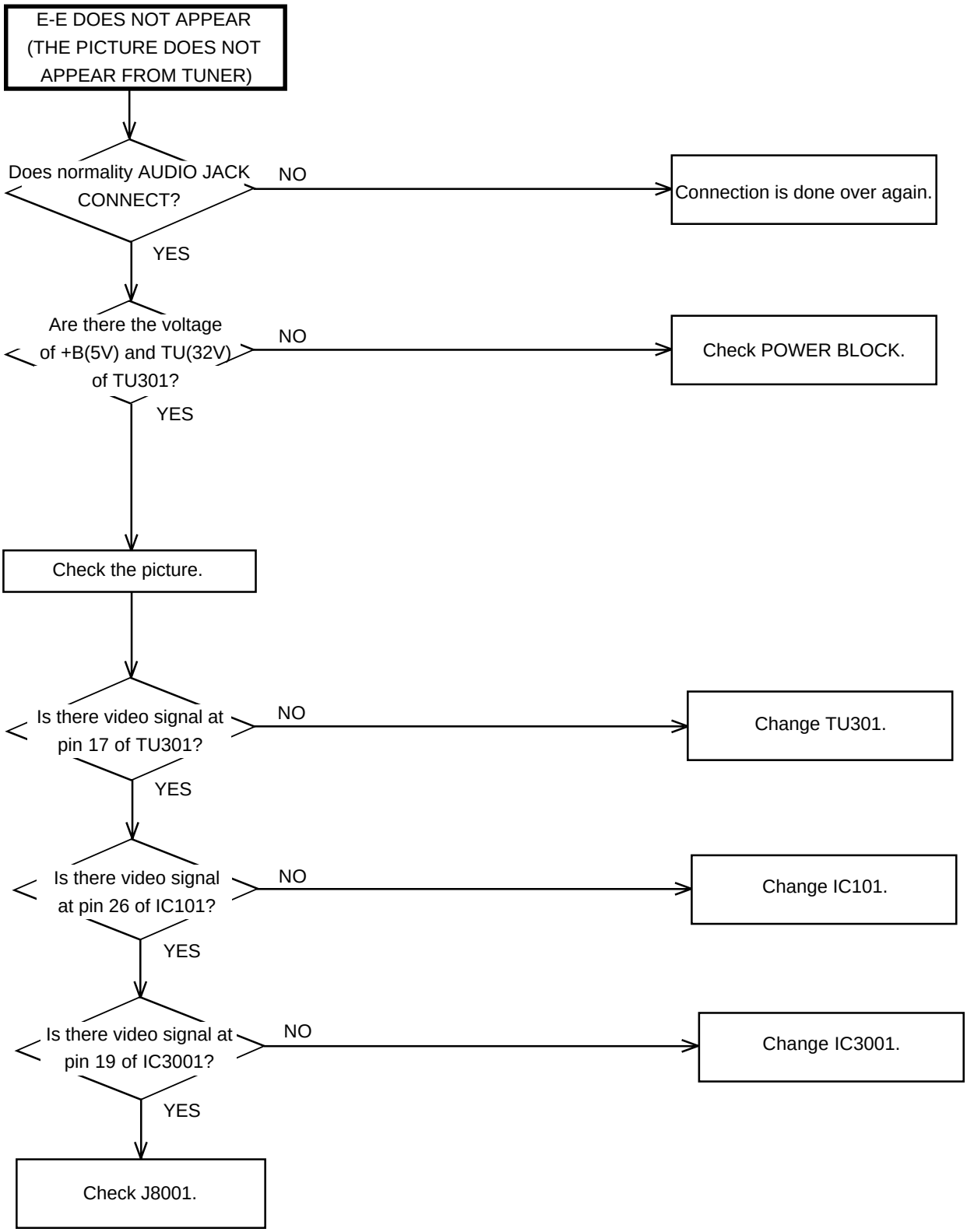
TROUBLESHOOTING GUIDE



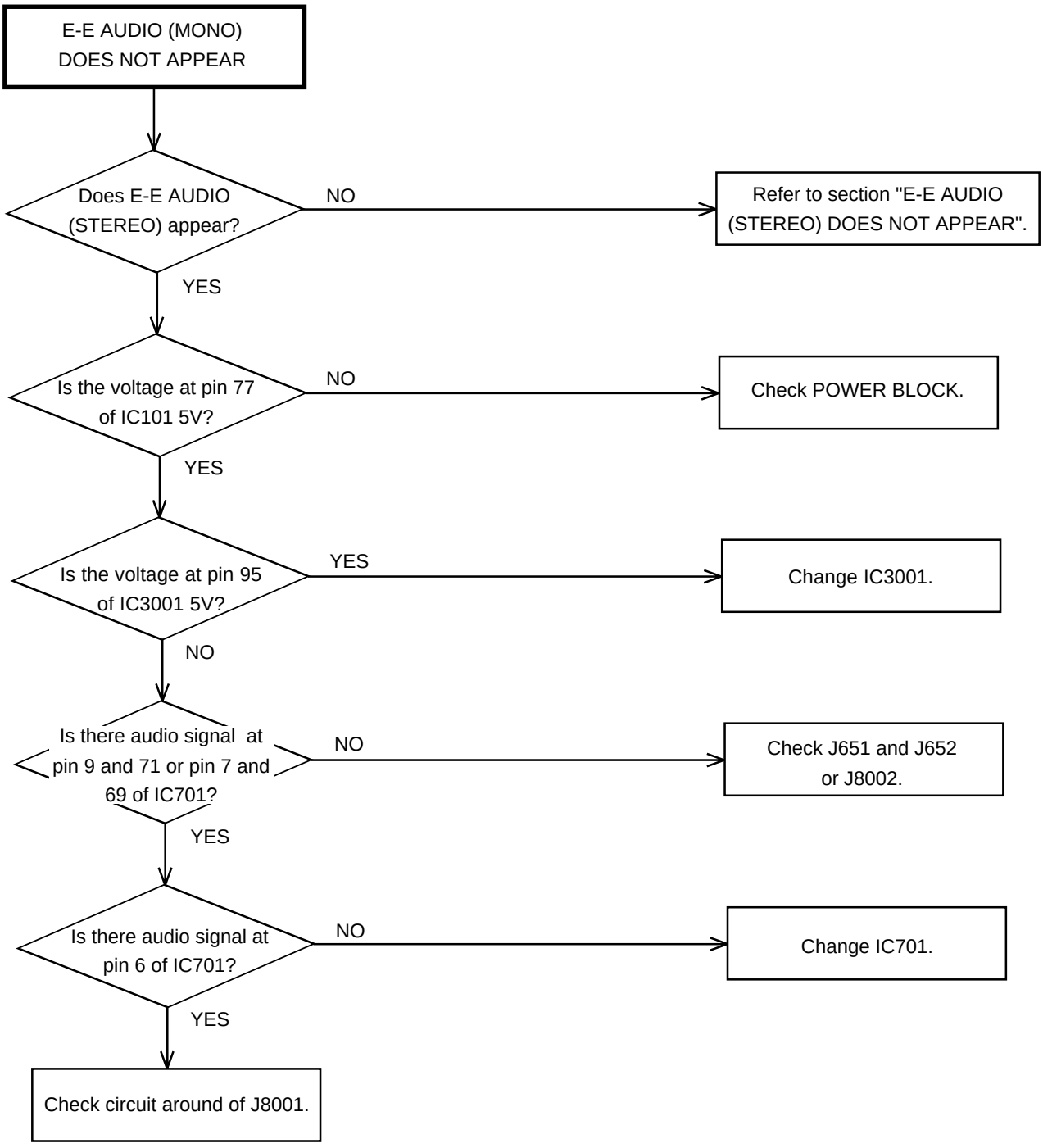
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORD FROM INPUT JACK OR TUNER
Is there video signal at pin 30 and 32 of IC 101?
NO
Check circuit of video signal from VIDEO IN or TUNER to IC101.
YES
Is the BASE of Q103 5V?
NO
Is the voltage at pin 96 of IC3001 5V?
NO
Change IC3001.
YES
YES
Is there video signal at pin 26 of IC101?
NO
Change IC101.
YES
Check CYLINDER UNIT and circuit around of CP101.

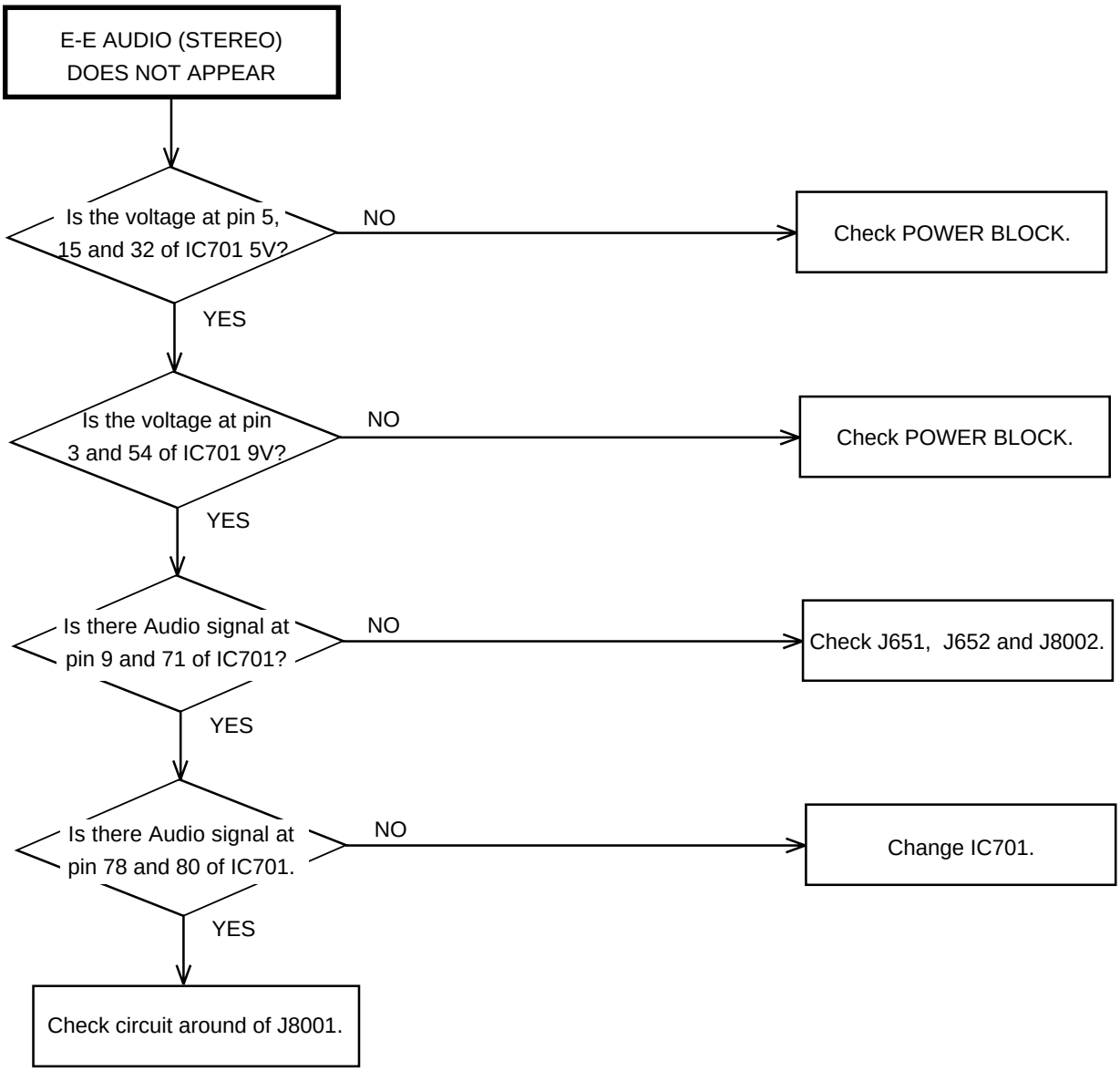
TROUBLESHOOTING GUIDE



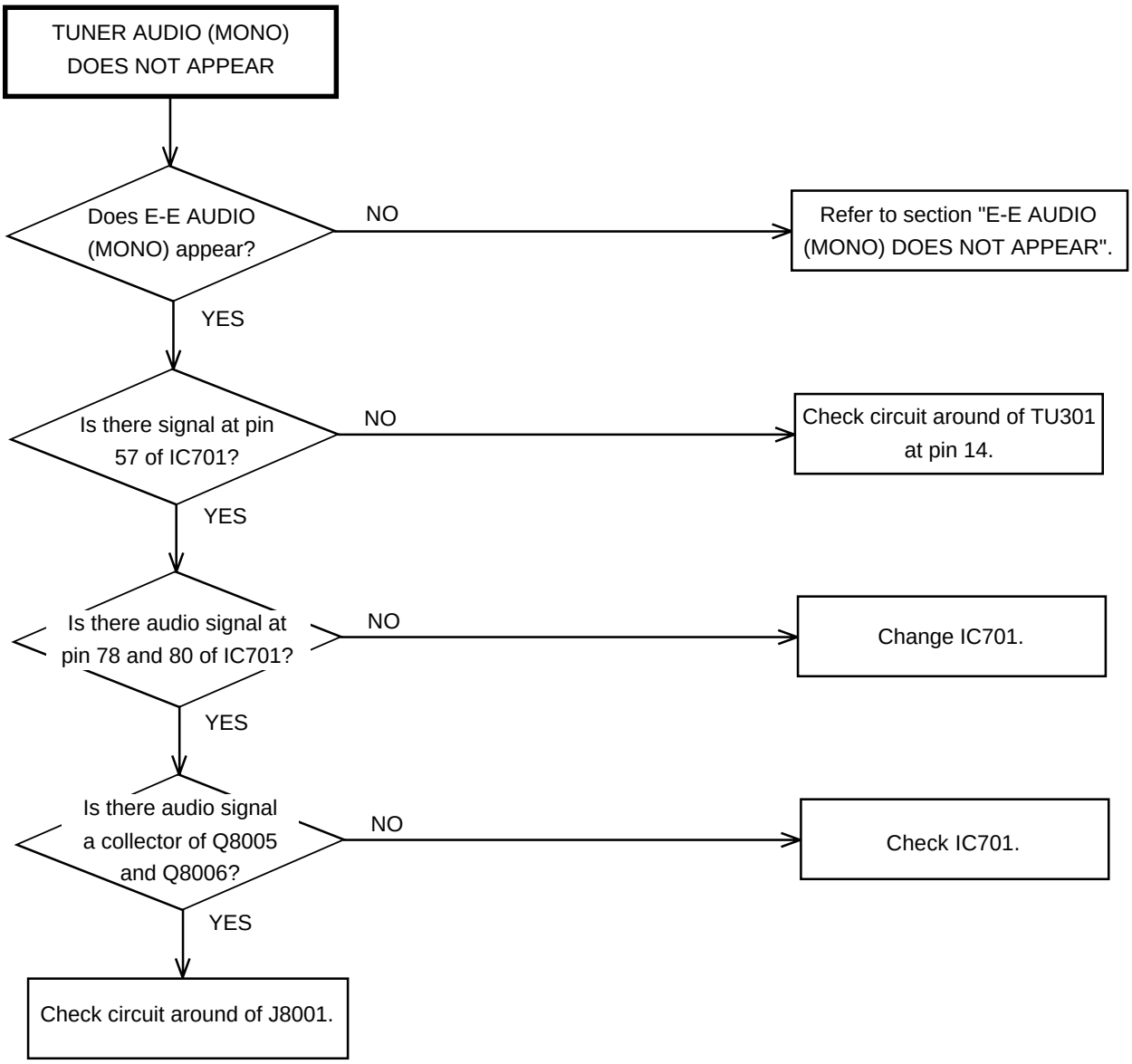
TROUBLESHOOTING GUIDE



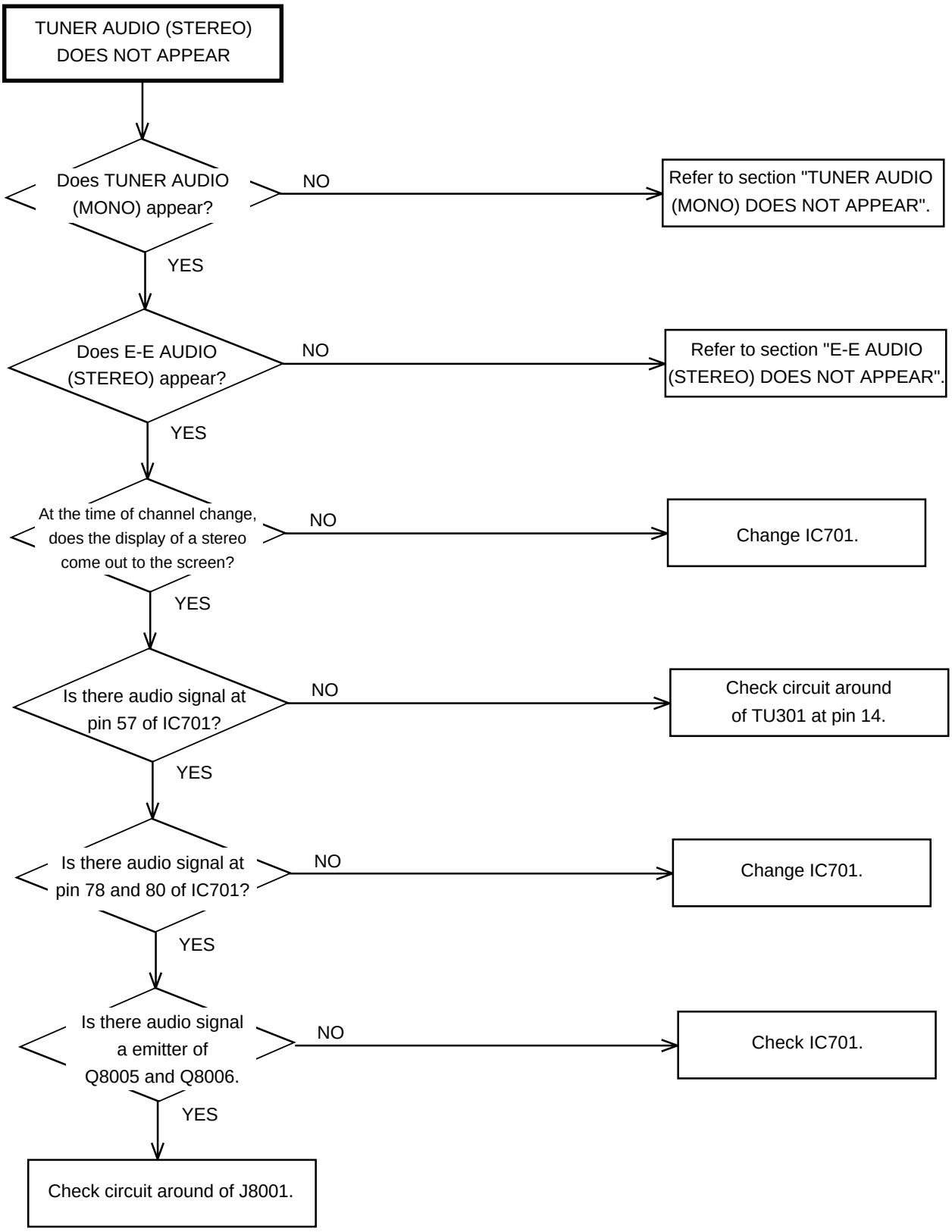
TROUBLESHOOTING GUIDE



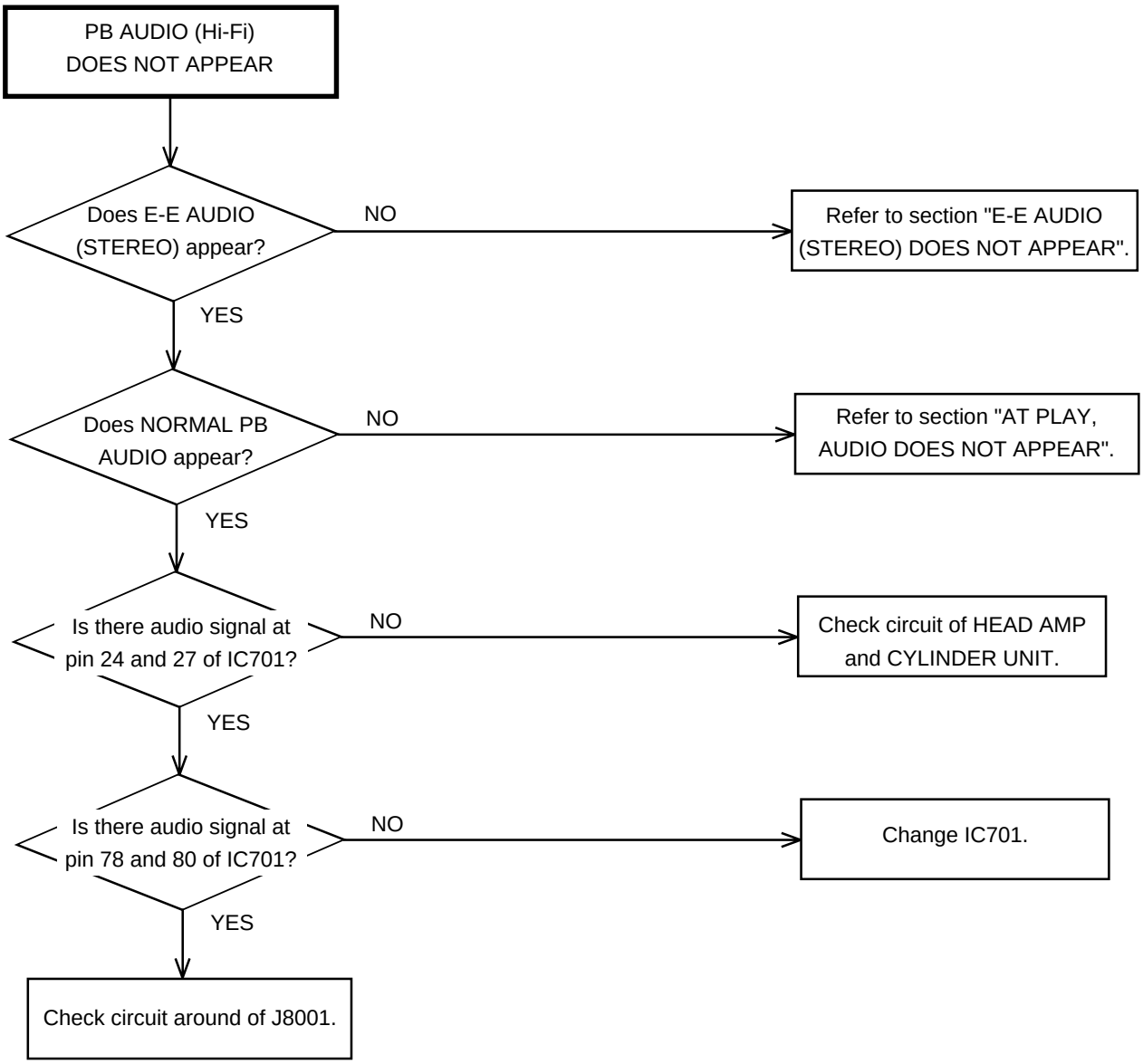
TROUBLESHOOTING GUIDE


TUNER AUDIO (MONO) DOES NOT APPEAR
Does E-E AUDIO (MONO) appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
Is there signal at pin 57 of IC701?
NO
Check circuit around of TU301 at pin 14.
YES
Is there audio signal at pin 78 and 80 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006?
NO
Check IC701.
YES
Check circuit around of J8001.

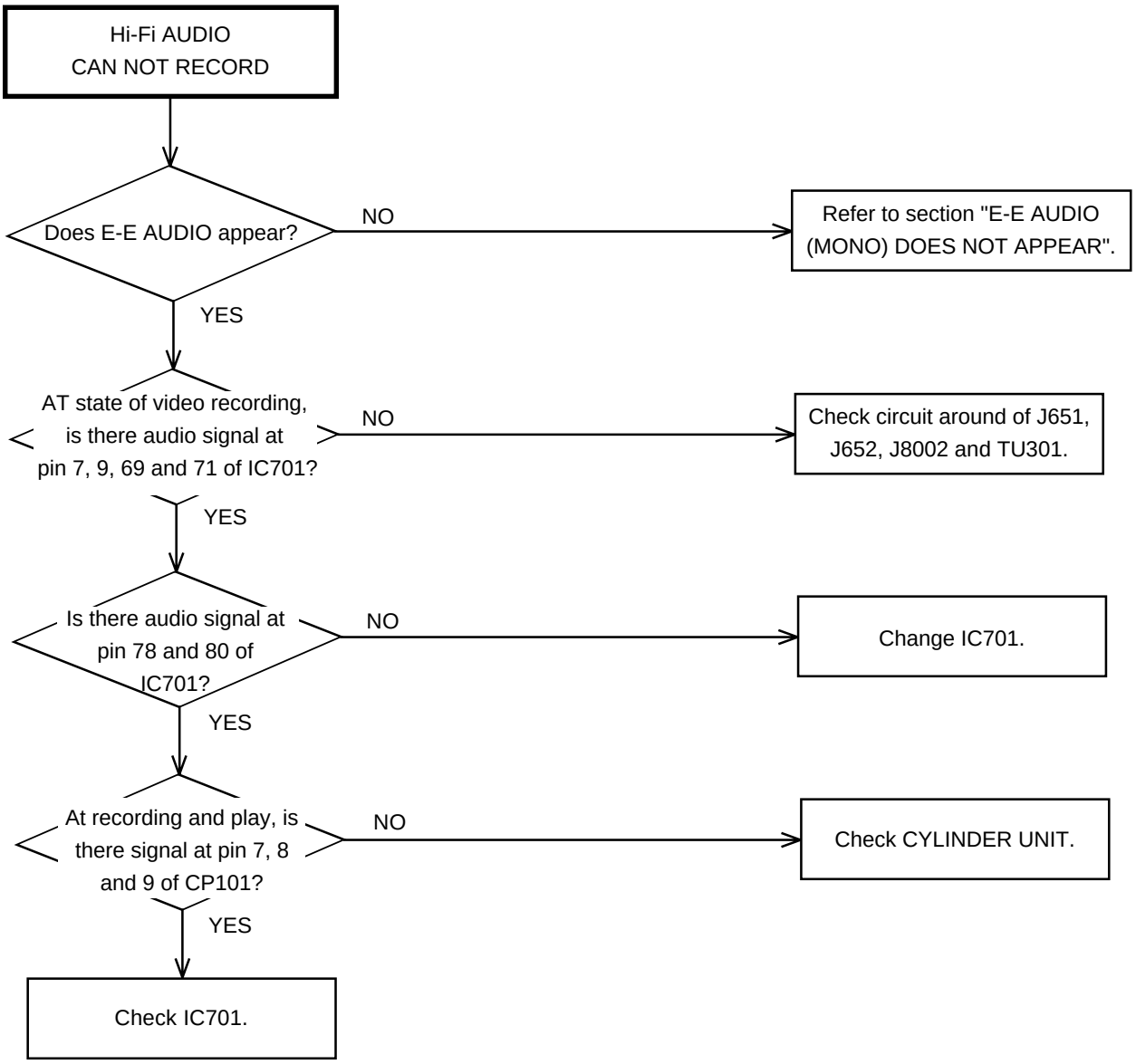
TROUBLESHOOTING GUIDE


TUNER AUDIO (STEREO) DOES NOT APPEAR
Does TUNER AUDIO (MONO) appear?
NO
Refer to section "TUNER AUDIO (MONO) DOES NOT APPEAR".
YES
Does E-E AUDIO (STEREO) appear?
NO
Refer to section "E-E AUDIO (STEREO) DOES NOT APPEAR".
YES
At the time of channel change, does the display of a stereo come out to the screen?
NO
Change IC701.
YES
Is there audio signal at pin 57 of IC701?
NO
Check circuit around of TU301 at pin 14.
YES
Is there audio signal at pin 78 and 80 of IC701?
NO
Change IC701.
YES
Is there audio signal a emitter of Q8005 and Q8006.
NO
Check IC701.
YES
Check circuit around of J8001.

TROUBLESHOOTING GUIDE

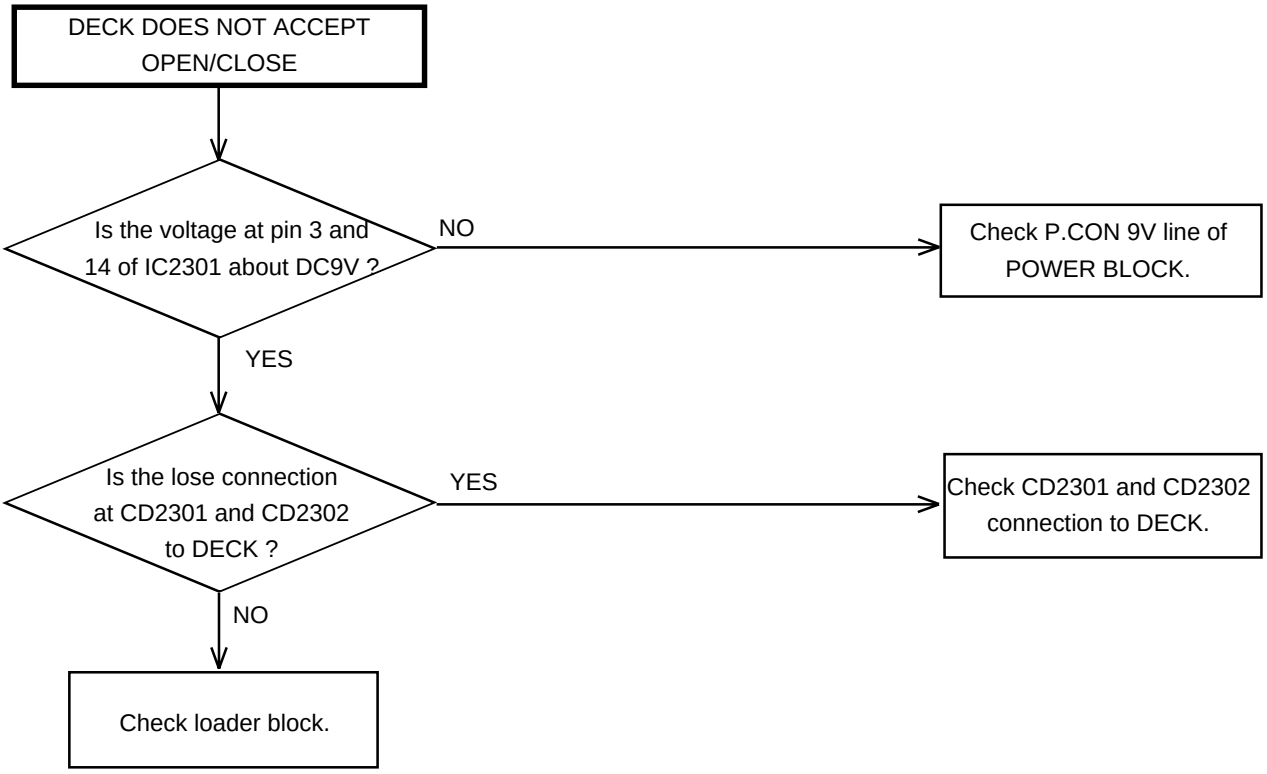


TROUBLESHOOTING GUIDE

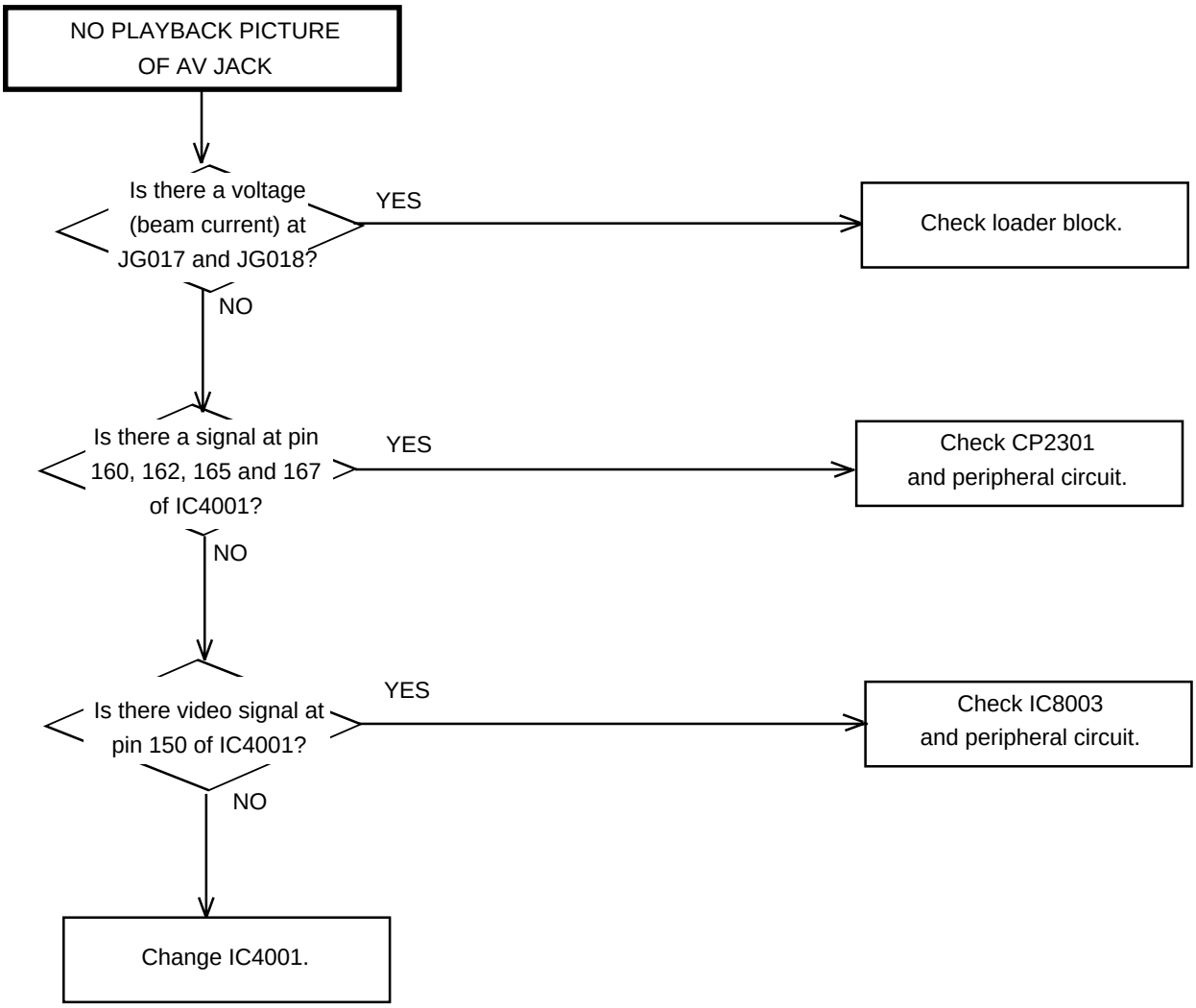

Hi-Fi AUDIO
CAN NOT RECORD
Does E-E AUDIO appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
AT state of video recording, is there audio signal at pin 7, 9, 69 and 71 of IC701?
NO
Check circuit around of J651, J652, J8002 and TU301.
YES
Is there audio signal at pin 78 and 80 of IC701?
NO
Change IC701.
YES
At recording and play, is there signal at pin 7, 8 and 9 of CP101?
NO
Check CYLINDER UNIT.
YES
Check IC701.

TROUBLESHOOTING GUIDE

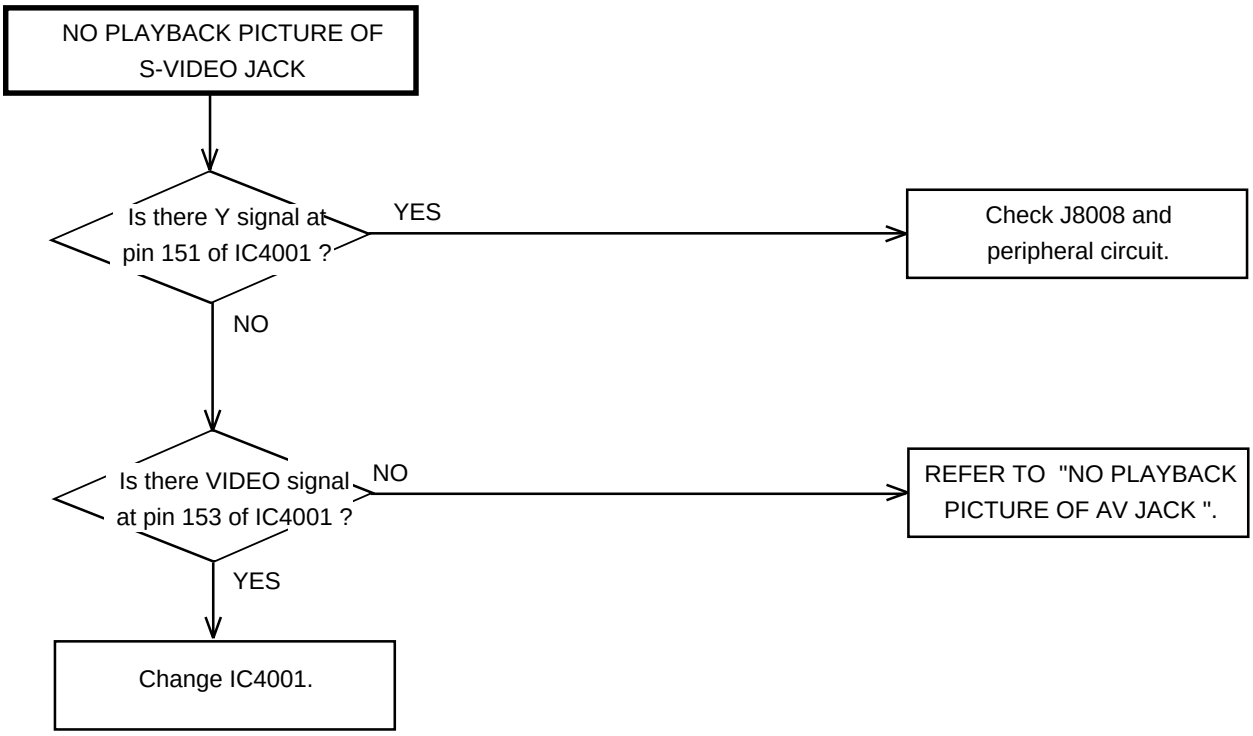
(DVD SECTION)


DECK DOES NOT ACCEPT OPEN/CLOSE
Is the voltage at pin 3 and 14 of IC2301 about DC9V ?
NO
Check P.CON 9V line of POWER BLOCK.
YES
Is the lose connection at CD2301 and CD2302 to DECK ?
YES
Check CD2301 and CD2302 connection to DECK.
NO
Check loader block.

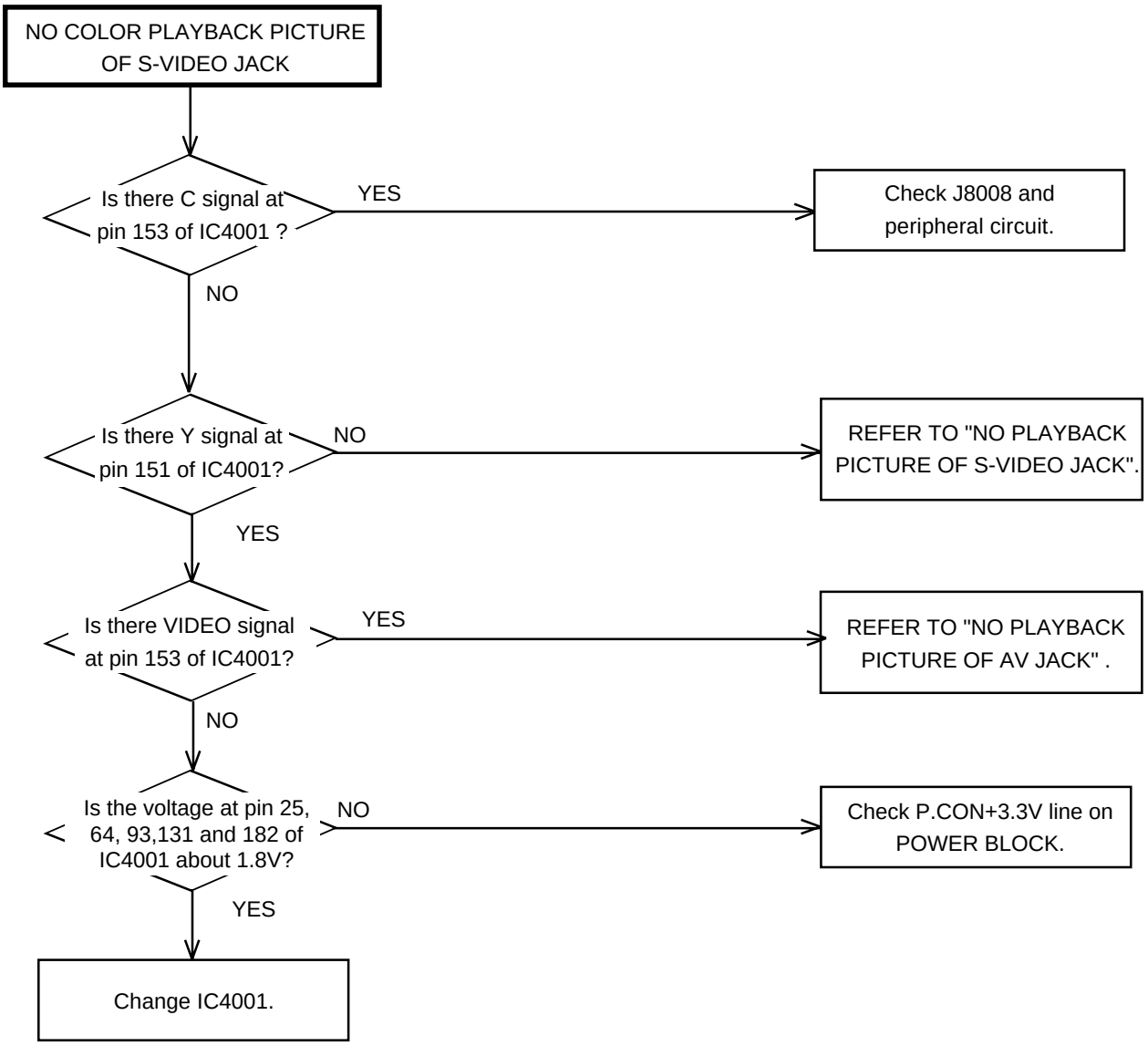
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF AV JACK
Is there a voltage (beam current) at JG017 and JG018?
YES
Check loader block.
NO
Is there a signal at pin 160, 162, 165 and 167 of IC4001?
YES
Check CP2301 and peripheral circuit.
NO
Is there video signal at pin 150 of IC4001?
YES
Check IC8003 and peripheral circuit.
NO
Change IC4001.

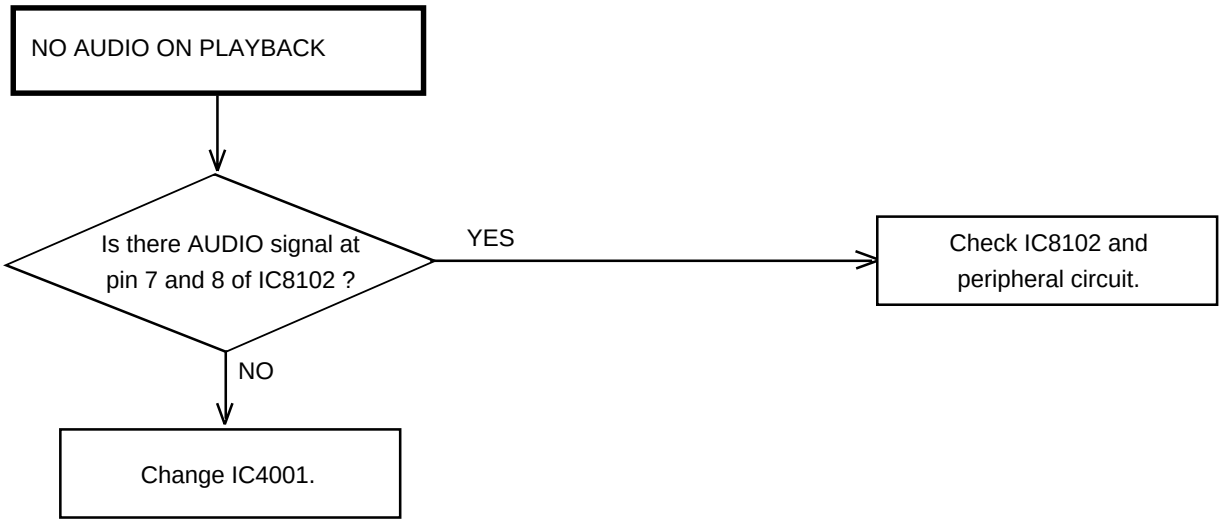
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF S-VIDEO JACK
Is there Y signal at pin 151 of IC4001 ?
YES
Check J8008 and peripheral circuit.
NO
Is there VIDEO signal at pin 153 of IC4001 ?
NO
REFER TO "NO PLAYBACK PICTURE OF AV JACK ".
YES
Change IC4001.

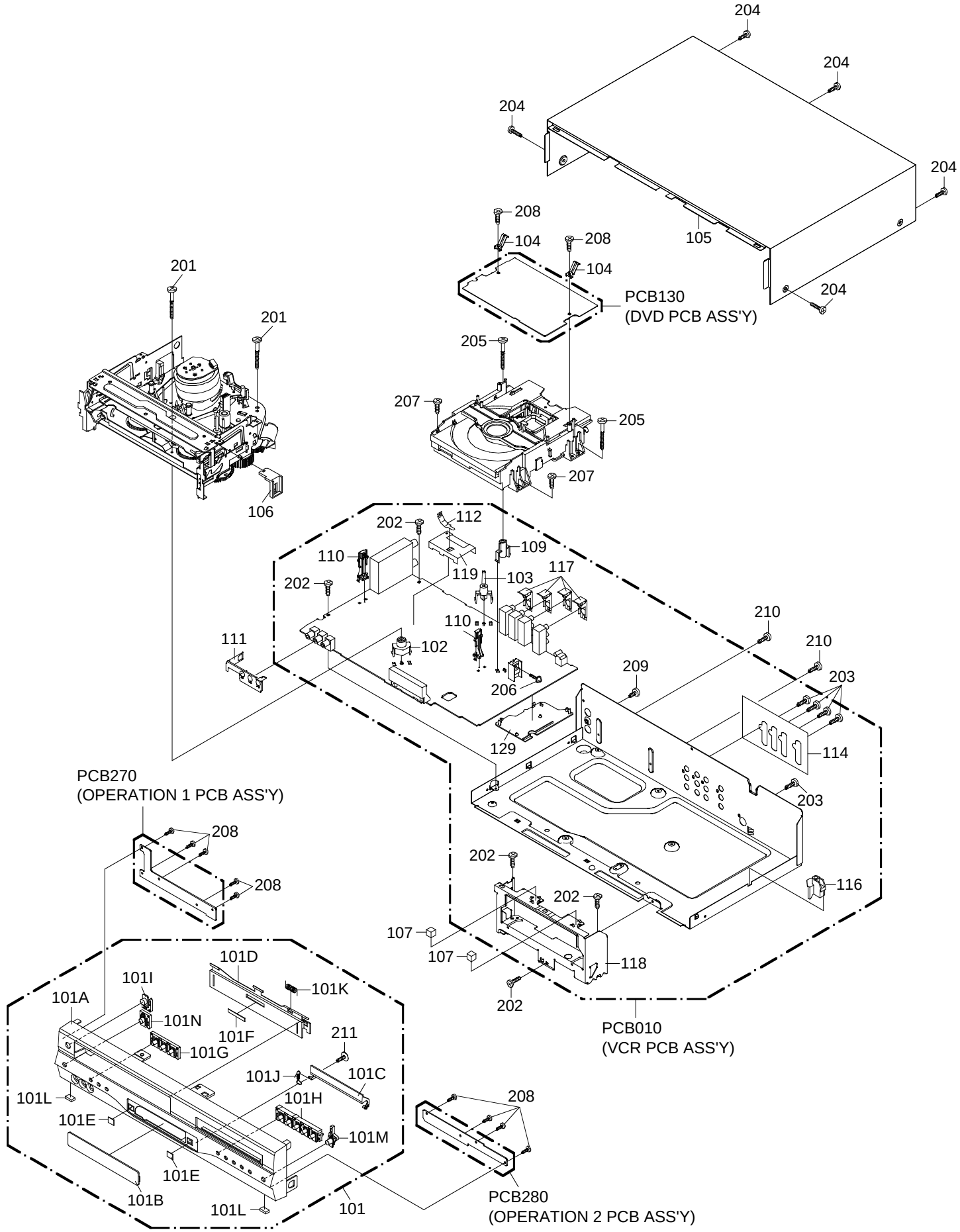
TROUBLESHOOTING GUIDE


NO COLOR PLAYBACK PICTURE OF S-VIDEO JACK
Is there C signal at pin 153 of IC4001 ?
YES
Check J8008 and peripheral circuit.
NO
Is there Y signal at pin 151 of IC4001?
NO
REFER TO "NO PLAYBACK PICTURE OF S-VIDEO JACK".
YES
Is there VIDEO signal at pin 153 of IC4001?
YES
REFER TO "NO PLAYBACK PICTURE OF AV JACK" .
NO
Is the voltage at pin 25, 64, 93,131 and 182 of IC4001 about 1.8V?
NO
Check P.CON+3.3V line on POWER BLOCK.
YES
Change IC4001.

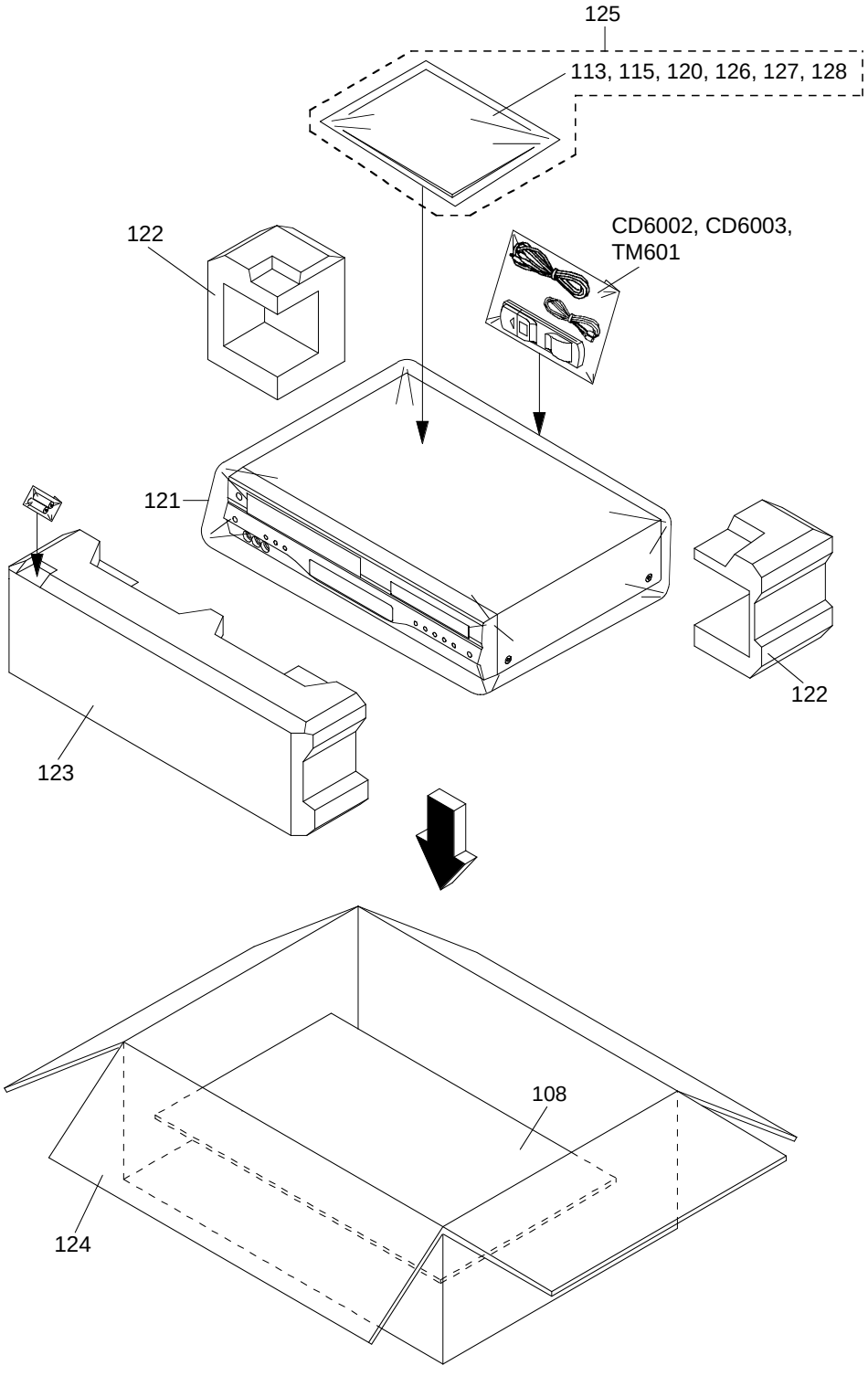
TROUBLESHOOTING GUIDE


NO AUDIO ON PLAYBACK
Is there AUDIO signal at pin 7 and 8 of IC8102 ?
YES
Check IC8102 and peripheral circuit.
NO
Change IC4001.

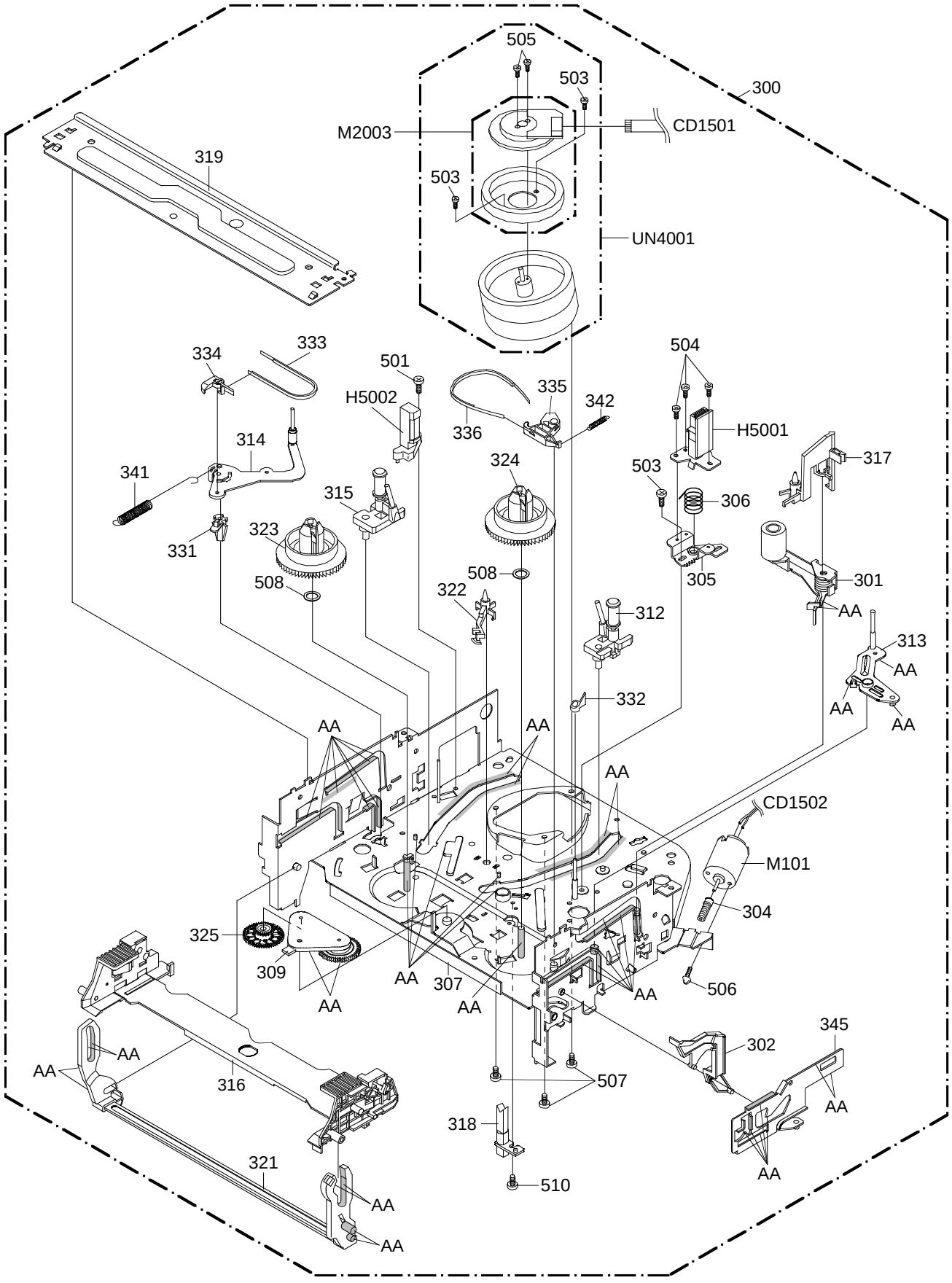
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW
(PACKING DIAGRAM)



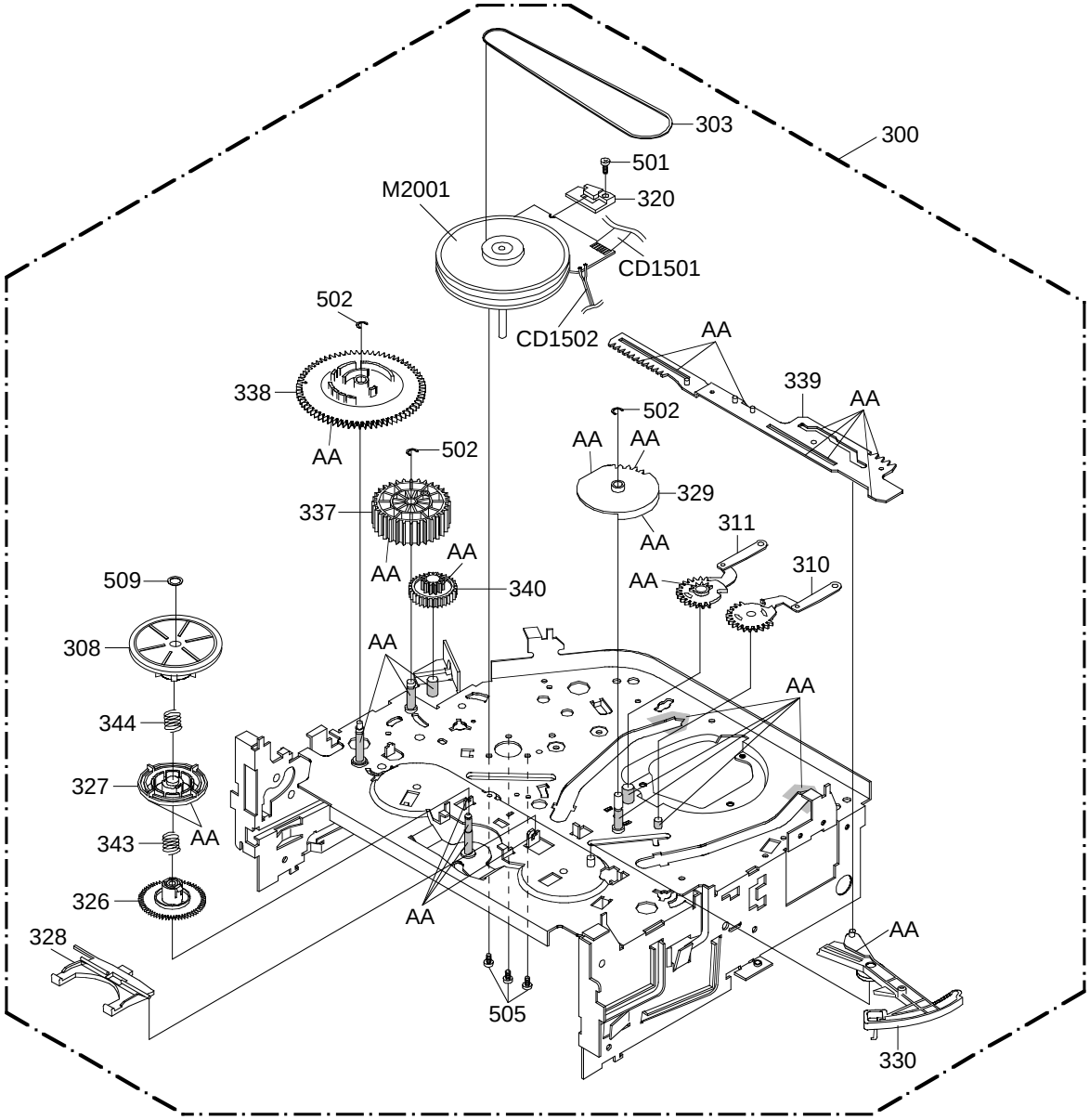
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section. Check if the correct grease is applied for each position.

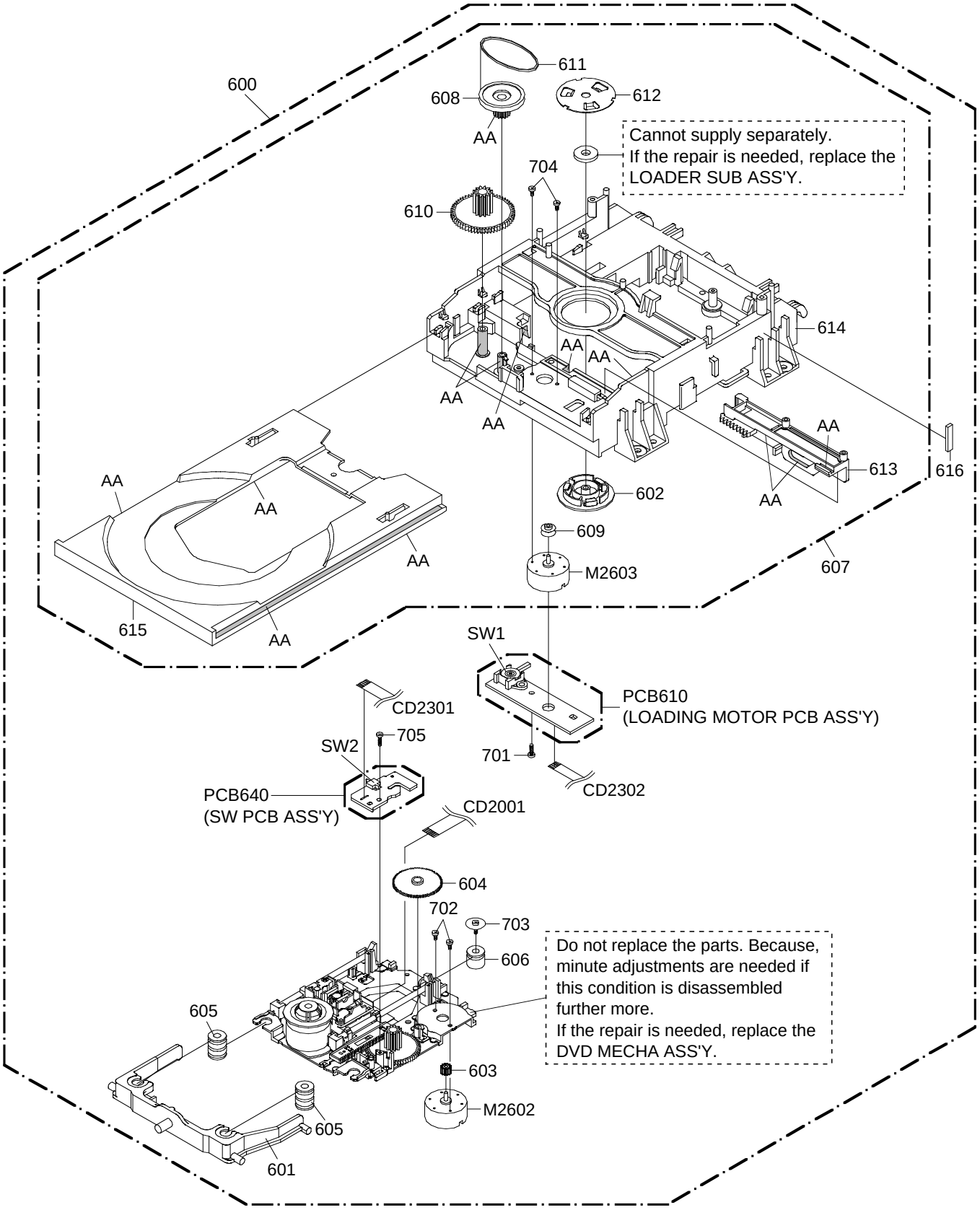
CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section. Check if the correct grease is applied for each position.

DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE006718	7A7010086A	FRONT CABI ASS'Y	
101A	AE006719	701WPJ1347	CABINET,FRONT	
101B	AE006720	711WPD0678	PLATE,DISPLAY	
101C	AE006721	712WPJ0904	FLAP,DVD	
101D	AE007195	712WPJ0926	FLAP,VCR	
101E	AE001167	7230007689	SHEET,LED	
101F	AE001847	7235490018	BADGE,BRAND	
101G	AE006722	736WPB0005	BUTTON,FRAME-VCR	
101H	AE006723	736WPB0006	BUTTON,FRAME-DVD	
101I	AE007196	736WPB0016	BUTTON,POWER	
101J	AE001324	742WKA0001	SPRING,DVD-FLAP	
101K	AE001848	743WKA0042	SPRING,FLAP	
101L	AE004701	800WFAA015	CUSHION,LEG	
101M	AE007197	736WPB0014	BUTTON,OPEN	
101N	AE007198	736WPB0017	BUTTON,EJECT	
102	AE006652	701WPA1363	HOLDER,DECK	
103	AE006653	701WPA1364	HOLDER,DECK	
104	AE003509	753WUA0065	SPRING,EARTH	
105	AE006725	702WSA0241	CABINET,TOP	
106	AE006726	761WPA0382	HOLDER,DECK TOP	
107	AE001852	8965TS1010	CUSHION 65TS10-10	10x10x25
108	AE005535	795WCA0674	PAD,FLAT	
109	AE004703	761WPA0321	HOLDER,DVD BL	
110	BZ710498	85OP700038	HOLDER,END SENSOR	
111	AE006728	752WUA0010	SHIELD,JACK	
112	BZ710331	753WUAA006	SPRING,EARTH HEAD AMP	
113	AE007435	J2F40117A	REGISTRATION CARD	
114	AE007199	7230007952	SHEET,JACK	
115	AE007436	J2F40128A	WARNING SHEETT	
116	79091466	761WPA0261	HOLDER,DVD BR	
117	BZ710659	752WSA0290	SHIELD,COMPO	
118	AE006732	761WSA0234	ANGLE,FRONT	
119	BZ710466	752WSA0230	SHIELD,CASE HEAD AMP	
120	AE007437	J2F40129A	INFORMATION SHEET	
121	AD301577	791WHA0100	GIFT SHEET	
122	AE006733	792WHA0603	PACKAGE,BACK	
123	AE006734	792WHA0601	PACKAGE,FRONT	
124	AE006735	793WCD1619	GIFT BOX	
125	AE007438	A2F401H975	INSTRUCTION BOOK KIT	
126	AE007439	JB5RD500	POLYBAG,INSTRUCTION	
127	AE007440	J2F40101A	INSTRUCTION BOOK	
128	AE007441	J2F40107A	QUICK SET-UP SHEET	
129	AE007201	761WPA0406	COVER,PCB	
201	AE006673	8109130B7U	SCREW,TAP TITE(B) R PAN	3x27
202	AE007202	810923053U	SCREW,TAP TITE(B) R BIND	3x5.3
203	AE003526	810923080U	SCREW,TAP TITE(B) BIND	3x8
204	AE004724	8109K3060U	SCREW,TAP TITE(B) BIND(3D)	3x6
205	AE005537	8154D3033U	SCREW,TAP TITE(B) WH8	3x33R
206	AE003524	8109I30A0U	SCREW,TAP TITE(B) WH7	3x10
207	AE005541	810F13080U	SEMS(F)	3x8
208	AE003530	811022680U	SCREW,TAP TITE(P) BIND	2.6x8
209	AE005539	810713040U	SCREW,TAP TITE(S) PAN	3x4
210	AE005540	810722660U	SCREW,TAP TITE(S) BIND	2.6x6
211	AE006822	8110E2680U	SCREW,TAP TITE(P) WH10	M2.6x8

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
300	AE006739	A2F401H420K	DECK ASSY	A2F401H420K
301	AE005514	85OA400245	PINCH ROLLER BLOCK VA2	
302	AE006679	85OP900759	LEVER,FLAP(S)	
303	BZ710193	85OP200290	BELT,CAPSTAN (S)	
304	BZ710515	85OP600581	WORM	
305	BZ710094	85OP500083	BASE,AC HEAD	
306	BZ710112	85OP800324	SPRING,AC HEAD	
307	AE006676	85OA000529	MAIN CHASSIS ASS'Y(S)	
308	BZ710517	85OA200089	CLUTCH ASS'Y	
309	AE005920	85OA200092	ARM IDLER ASS'Y	
310	AE005836	85OA300068	LOADING ARM S UNIT	
311	AE005837	85OA300070	LOADING ARM T UNIT	
312	BZ710521	85OA400223	INCLINED BASE T UINT 3S	
313	AE005838	85OA400249	P5 ARM ASS'Y 2	
314	AE005839	85OA400248	TENSION ARM ASS'Y 2	
315	BZ710524	85OA400231	INCLINED BASE S UNIT	
316	AE006677	85OA900236	CASS HOLDER ASS'Y(S)	
317	BZ710552	85OP900745	CASS,OPENER	
318	BZ710106	85OP700035	REFLECTOR,LED	
319	AE006678	85OP900756	BRACKET,TOP(S)	
320	AE007221	85OP400554	HOLDER,CAPSTAN	
321	AE005842	85OA900233	LINK UNIT	
322	BZ710531	85OP000496	POST,CASS GUIDE	
323	BZ710532	85OP200316	REEL,S (S)	
324	BZ710533	85OP200317	REEL,T (S)	
325	BZ710534	85OP200308	GEAR,IDLER	
326	BZ710535	85OP200311	GEAR,CLUTCH	
327	BZ710536	85OP200312	GEAR,COUPLING	
328	BZ710537	85OP200313	LEVER,CLUTCH	
329	BZ710538	85OP300194	GEAR,MAIN LOADING	
330	BZ710092	85OP400490	LEVER,TENSION	
331	BZ710093	85OP400492	HOLDER,TENSION	
332	BZ710366	85OP400520	CAP.P4	
333	BZ710762	85OP400542	BAND,TENSION	
334	BZ710540	85OP400533	CONNECT,TENSION	
335	BZ710541	85OP600573	ARM,BRAKE T	
336	BZ710763	85OP600584	BAND,BRAKE T	
337	BZ710543	85OP600577	CAM,PINCH ROLLER	
338	BZ710544	85OP600578	CAM,MAIN	
339	AE005843	85OP600585	ROD,MAIN	
340	BZ710546	85OP600582	GEAR,JOINT	
341	BZ710110	85OP800322	SPRING,TENSION	
342	BZ710547	85OP800360	SPRING,BRAKE T	
343	BZ710548	85OP800355	SPRING,COUPLING	
344	BZ710549	85OP800356	SPRING,RING	
345	AE005844	85OP900754	LEVER,LINK	
501	AE005845	810722680U	SCREW,TAP TITE(S) BIND	M2.6x8
502	AE005846	83ETW3000U	E-RING	3.0
503	AE005847	810722640U	SCREW,TAP TITE(S) BIND	M2.6x4
504	AE005848	810212060U	SCREW,PAN	M2x6
505	AE005849	810912660U	SCREW,TAP TITE(B) PAN	M2.6x6
506	AE005850	810A13040U	SCREW/WASHER(A)	M3x4
507	AE005851	810A12650U	SCREW/WASHER(A)	M2.6x5
508	BZ710056	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13
509	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
510	AE005540	810722660U	SCREW,TAP TITE(S) BIND	2.6x6
CD1501	BZ614292	122H071704	CORD JUMPER	2H071704
CD1502	BZ614339	122Y021902	CORD JUMPER	2Y021902
H5001	AE004714	1523Q91004	HEAD,AUDIO CONTROL	VTR-1X2RPE22-772
H5002	AD301676	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154
⚠ M101	AE005552	1596S98002	MOTOR,LOADING	MDB2B66B
M2001	AE005853	1510S98044	CAPSTAN DD UNIT	F2QVB73B
⚠ M2003	AE006792	1589S11025	MICRO MOTOR	I20AL34K
⚠ UN4001	AE006680	A2F401H500	CYLINDER UNIT ASS'Y	A2F401H500

DVD DECK REPLACEMENT PARTS LIST

	Location No.	TSB P/N	Reference No.	Description	
⚠	600	AE006521	A2F401H650	DVD MECHA ASS'Y	A2F401H650
	601	AE005003	92P100109A	HOLDER,TRAVERSE	
	602	AE003550	92P100094A	CLAMPER	
	603	AE003551	92P100088A	GEAR,MOTOR	
	604	AE005414	92P100108A	GEAR,MIDDLE	
	605	AE003538	92P200013A	INSULATOR(F)	
	606	AE003539	92P200014A	INSULATOR(R)	
	607	AE006115	92SBB0029A	LOADER SUB ASS'Y	
	608	AE003541	92P100095A	GEAR,PULLEY	
	609	AE003542	92P100097A	PULLEY,MOTOR	
	610	AE003549	92P100096A	GEAR,MAIN	
	611	AE003544	92P200012A	BELT,LOADING	
	612	AE003545	92P000014A	PLATE,CLAMPER	
	613	AE003546	92P100093A	RACK,LOADING	
	614	AE003547	92P100091A	FRAME,MAIN	
	615	AE003548	92P100092A	TRAY	
	616	BZ710149	800WFAA008	CUSHION C	
	701	AE003530	811022680U	SCREW,TAP TITE(P) BIND	2.6x8
	702	AE003554	814011723U	SCREW,PAN	M1.7x2.3 P3
	703	AE003555	816112080U	SEMS.TAP TITE(P) PAN W10	2x8
	704	AE003556	814011730U	SCREW,PAN	M1.7x3 P3
	705	AE003557	811022080U	SCREW,TAP TITE(P) BIND	2x8
	CD2001	AD301855	122H0O1901	CORD JUMPER	2H0O1901
	CD2301	AE003558	122H062102	CORD JUMPER	2H062102
	CD2302	AE003559	122H052601	CORD JUMPER	2H052601
⚠	M2602	AE005930	1515S98003	FEED MOTOR	BCZ3B03B
⚠	M2603	AE005931	1596S18003	MOTOR,LOADING	BCZ3B52B
	PCB610	AE005932	A5R801V610	PCB ASS'Y	DED003A
	PCB640	AE006740	A2F401H640	PCB ASS'Y	DED012B
	SW1	AE003564	0515S32002	SWITCH	SSS-13-2
	SW2	AE003565	0500101037	PUSH SWITCH	ESE22MH24

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
R101	AE002152	R803R9561J	RC	560 OHM 1/16W
R102	AE001784	R803R9103J	RC	10K OHM 1/16W
R103	AE001784	R803R9103J	RC	10K OHM 1/16W
R105	BZ210119	R002T4102J	RC	1K OHM 1/4W
R106	AE002533	R803R9681J	RC	680 OHM 1/16W
R107	AE001895	R803R9392J	RC	3.9K OHM 1/16W
R108	AE001891	R803R9223J	RC	22K OHM 1/16W
R109	BZ210119	R002T4102J	RC	1K OHM 1/4W
R110	AE001805	R803R9822J	RC	8.2K OHM 1/16W
R111	AE001805	R803R9822J	RC	8.2K OHM 1/16W
R112	AE001282	R803R9334J	RC	330K OHM 1/16W
R113	AE001890	R803R9221J	RC	220 OHM 1/16W
R114	AE000851	R803R9203J	RC	20K OHM 1/16W
R115	AE002154	R803R9821J	RC	820 OHM 1/16W
R116	AE002145	R803R9153J	RC	15K OHM 1/16W
R117	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R119	AE002147	R803R9182J	RC	1.8K OHM 1/16W
R122	AE001785	R803R9104J	RC	100K OHM 1/16W
R123	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R124	AE001806	R803R9823J	RC	82K OHM 1/16W
R126	AE002147	R803R9182J	RC	1.8K OHM 1/16W
R127	AE001802	R803R9684J	RC	680K OHM 1/16W
R129	AE002147	R803R9182J	RC	1.8K OHM 1/16W
R131	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R132	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R133	AE001805	R803R9822J	RC	8.2K OHM 1/16W
R136	AE001891	R803R9223J	RC	22K OHM 1/16W
R137	AE001007	R002T4123J	RC	12K OHM 1/4W
R138	AE001891	R803R9223J	RC	22K OHM 1/16W
R139	AE001788	R803R9123J	RC	12K OHM 1/16W
R140	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R141	AE001781	R803R9101J	RC	100 OHM 1/16W
R142	AE002154	R803R9821J	RC	820 OHM 1/16W
R144	BZ210125	R002T4224J	RC	220K OHM 1/4W
R301	AE002150	R803R9333J	RC	33K OHM 1/16W
R302	AE001783	R803R9102J	RC	1K OHM 1/16W
R304	AE001783	R803R9102J	RC	1K OHM 1/16W
R305	BZ210119	R002T4102J	RC	1K OHM 1/4W
R306	79091142	R803R9220J	RC	22 OHM 1/16W
⚠R501	BZ210219	R0G3K2335K	RC	3.3M OHM 1/2W
⚠R502	BZ210039	R3X181010J	R,METAL OXIDE	1 OHM 1W
⚠R503	BZ210206	R002T2155J	RC	1.5M OHM 1/2W
⚠R504	AE000145	R002T2561J	RC	560 OHM 1/2W
R505	AE002237	R002T4684J	RC	680K OHM 1/4W
R506	AE001774	R002T2105J	RC	1M OHM 1/2W
R507	AE001784	R803R9103J	RC	10K OHM 1/16W
R508	AD301203	R002T4101J	RC	100 OHM 1/4W
R509	AD301203	R002T4101J	RC	100 OHM 1/4W
R511	AE001299	R803R9564J	RC	560K OHM 1/16W
⚠R512	AE001779	R3X181683J	R,METAL OXIDE	68K OHM 1W
R513	AE000934	R002T2391J	RC	390 OHM 1/2W
R514	AE000350	R002T2221J	RC	220 OHM 1/2W
R515	AE001792	R803R9273J	RC	27K OHM 1/16W
⚠R516	AE005735	R63881R22J	R,FUSE	0.22 OHM 1W
⚠R517	BZ210180	R002T2102J	RC	1K OHM 1/2W
R518	79091139	R803R9151J	RC	150 OHM 1/16W
R519	AE001783	R803R9102J	RC	1K OHM 1/16W
R520	AE001795	R803R9332F	RC	3.3K OHM 1/16W
R521	AE002151	R803R9391J	RC	390 OHM 1/16W
R522	AE001795	R803R9332F	RC	3.3K OHM 1/16W
R523	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R524	AD301203	R002T4101J	RC	100 OHM 1/4W
R527	BZ210135	R002T4221J	RC	220 OHM 1/4W
R529	AE002237	R002T4684J	RC	680K OHM 1/4W
R530	AE002236	R002T4474J	RC	470K OHM 1/4W
R531	AE001784	R803R9103J	RC	10K OHM 1/16W
R532	AE001784	R803R9103J	RC	10K OHM 1/16W
R533	BZ210135	R002T4221J	RC	220 OHM 1/4W
R534	AE002234	R002T2103J	RC	10K OHM 1/2W
R536	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R547	AE001785	R803R9104J	RC	100K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R549	BZ210164	R002T4104J	RC	100K OHM 1/4W
R552	AE001781	R803R9101J	RC	100 OHM 1/16W
R553	BZ210118	R002T4473J	RC	47K OHM 1/4W
R554	BZ210182	R002T4103J	RC	10K OHM 1/4W
R602	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R603	AE001778	R002T4622J	RC	6.2K OHM 1/4W
R604	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R606	AE001555	R002T4563J	RC	56K OHM 1/4W
R607	BZ210135	R002T4221J	RC	220 OHM 1/4W
R651	AD301203	R002T4101J	RC	100 OHM 1/4W
R661	AE002154	R803R9821J	RC	820 OHM 1/16W
R662	AE003232	R803R9181J	RC	180 OHM 1/16W
R663	AE003232	R803R9181J	RC	180 OHM 1/16W
R664	AE002154	R803R9821J	RC	820 OHM 1/16W
R665	AE003232	R803R9181J	RC	180 OHM 1/16W
R666	AE003232	R803R9181J	RC	180 OHM 1/16W
R667	AE003232	R803R9181J	RC	180 OHM 1/16W
R668	AE003232	R803R9181J	RC	180 OHM 1/16W
R669	AE002154	R803R9821J	RC	820 OHM 1/16W
R670	AE003232	R803R9181J	RC	180 OHM 1/16W
R671	AE002154	R803R9821J	RC	820 OHM 1/16W
R672	AE003232	R803R9181J	RC	180 OHM 1/16W
R673	AE003232	R803R9181J	RC	180 OHM 1/16W
R674	AE003232	R803R9181J	RC	180 OHM 1/16W
R675	AE002154	R803R9821J	RC	820 OHM 1/16W
R676	AE001803	R803R9750J	RC	75 OHM 1/16W
R683	AE005090	R803R9221F	RC	220 OHM 1/16W
R685	AE001776	R002T4133J	RC	13K OHM 1/4W
R686	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R687	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R689	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R690	BZ210202	R002T4333J	RC	33K OHM 1/4W
R691	BZ210125	R002T4224J	RC	220K OHM 1/4W
R692	AD301301	R002T4152J	RC	1.5K OHM 1/4W
R701	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R702	BZ210118	R002T4473J	RC	47K OHM 1/4W
R703	AE001007	R002T4123J	RC	12K OHM 1/4W
R704	BZ210119	R002T4102J	RC	1K OHM 1/4W
R706	BZ210118	R002T4473J	RC	47K OHM 1/4W
R707	AE002147	R803R9182J	RC	1.8K OHM 1/16W
R708	AE001892	R803R9331J	RC	330 OHM 1/16W
R710	AE004696	R002T4394J	RC	390K OHM 1/4W
R711	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R712	BZ210118	R002T4473J	RC	47K OHM 1/4W
R713	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R714	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R715	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R716	AE001892	R803R9331J	RC	330 OHM 1/16W
R717	AE001892	R803R9331J	RC	330 OHM 1/16W
R718	AD301430	R002T4225J	RC	2.2M OHM 1/4W
R719	BZ210118	R002T4473J	RC	47K OHM 1/4W
R720	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R721	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R722	AE002147	R803R9182J	RC	1.8K OHM 1/16W
R723	AE001007	R002T4123J	RC	12K OHM 1/4W
R724	BZ210119	R002T4102J	RC	1K OHM 1/4W
R725	79091400	R803R9393J	RC	39K OHM 1/16W
R726	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R727	AE001796	R803R9471J	RC	470 OHM 1/16W
R728	AD301203	R002T4101J	RC	100 OHM 1/4W
R729	AD301203	R002T4101J	RC	100 OHM 1/4W
R731	AE001783	R803R9102J	RC	1K OHM 1/16W
R2301	AE001783	R803R9102J	RC	1K OHM 1/16W
R2302	AE005767	R803R9101F	RC	100 OHM 1/16W
R2303	AE001793	R803R92R2J	RC	2.2 OHM 1/16W
R2304	AE001793	R803R92R2J	RC	2.2 OHM 1/16W
R2305	AE001792	R803R9273J	RC	27K OHM 1/16W
R2306	AE005768	R803R96R8J	RC	6.8 OHM 1/16W
R2307	AE005031	R803R9753J	RC	75K OHM 1/16W
R2308	AE001784	R803R9103J	RC	10K OHM 1/16W
R2309	AE005767	R803R9101F	RC	100 OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R2318	AE005768	R803R96R8J	RC	6.8 OHM 1/16W
R2319	AE001898	R803R9563J	RC	56K OHM 1/16W
R2321	AE001784	R803R9103J	RC	10K OHM 1/16W
R2323	AE004247	R803R91R2J	RC	1.2 OHM 1/16W
R2324	AE001783	R803R9102J	RC	1K OHM 1/16W
R2325	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R2326	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R2327	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2328	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2329	AE004247	R803R91R2J	RC	1.2 OHM 1/16W
R2330	AE001783	R803R9102J	RC	1K OHM 1/16W
R2332	AE001890	R803R9221J	RC	220 OHM 1/16W
R2333	AE001890	R803R9221J	RC	220 OHM 1/16W
R2334	AE001784	R803R9103J	RC	10K OHM 1/16W
R2335	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R2336	AE002151	R803R9391J	RC	390 OHM 1/16W
R2337	AE001784	R803R9103J	RC	10K OHM 1/16W
R2338	AE001788	R803R9123J	RC	12K OHM 1/16W
R2339	AE001787	R803R9122J	RC	1.2K OHM 1/16W
R2340	AE005768	R803R96R8J	RC	6.8 OHM 1/16W
R2341	AE005768	R803R96R8J	RC	6.8 OHM 1/16W
R2342	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2346	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R2347	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R2348	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R2349	AE001781	R803R9101J	RC	100 OHM 1/16W
R2350	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2351	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2352	AE001781	R803R9101J	RC	100 OHM 1/16W
R2353	AE001781	R803R9101J	RC	100 OHM 1/16W
R2355	AE001783	R803R9102J	RC	1K OHM 1/16W
R2356	AE004251	R803R9820J	RC	82 OHM 1/16W
R2357	AE001783	R803R9102J	RC	1K OHM 1/16W
R2358	AE001889	R803R9121J	RC	120 OHM 1/16W
R2359	AE004251	R803R9820J	RC	82 OHM 1/16W
R2360	AE001794	R803R9330J	RC	33 OHM 1/16W
R2361	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R2362	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R3001	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R3002	AE001775	R002T4121J	RC	120 OHM 1/4W
R3003	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R3004	AE001282	R803R9334J	RC	330K OHM 1/16W
R3006	AE001797	R803R9473J	RC	47K OHM 1/16W
R3007	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R3008	AE001783	R803R9102J	RC	1K OHM 1/16W
R3009	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R3010	AE001784	R803R9103J	RC	10K OHM 1/16W
R3011	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3012	AE001555	R002T4563J	RC	56K OHM 1/4W
R3014	AE001898	R803R9563J	RC	56K OHM 1/16W
R3015	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3016	AE000356	R002T4271J	RC	270 OHM 1/4W
R3017	AE002152	R803R9561J	RC	560 OHM 1/16W
R3019	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3020	AE002152	R803R9561J	RC	560 OHM 1/16W
R3021	AE001783	R803R9102J	RC	1K OHM 1/16W
R3022	AE002146	R803R9154J	RC	150K OHM 1/16W
R3025	AE001796	R803R9471J	RC	470 OHM 1/16W
R3026	AE002149	R803R9274J	RC	270K OHM 1/16W
R3027	AE002145	R803R9153J	RC	15K OHM 1/16W
R3028	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3030	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R3031	AE001887	R803R9105J	RC	1M OHM 1/16W
R3032	AE001784	R803R9103J	RC	10K OHM 1/16W
R3033	AE001784	R803R9103J	RC	10K OHM 1/16W
R3034	AE001887	R803R9105J	RC	1M OHM 1/16W
R3035	AE001784	R803R9103J	RC	10K OHM 1/16W
R3036	AE001784	R803R9103J	RC	10K OHM 1/16W
R3037	AE001797	R803R9473J	RC	47K OHM 1/16W
R3038	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R3043	AE001896	R803R9474J	RC	470K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R3044	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R3045	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R3046	AE001784	R803R9103J	RC	10K OHM 1/16W
R3047	AE001784	R803R9103J	RC	10K OHM 1/16W
R3049	AE001797	R803R9473J	RC	47K OHM 1/16W
R3050	AD301203	R002T4101J	RC	100 OHM 1/4W
R3051	AE002148	R803R9183J	RC	18K OHM 1/16W
R3053	AE001896	R803R9474J	RC	470K OHM 1/16W
R3055	AE001891	R803R9223J	RC	22K OHM 1/16W
R3056	AE001783	R803R9102J	RC	1K OHM 1/16W
R3057	AE001891	R803R9223J	RC	22K OHM 1/16W
R3062	AE001783	R803R9102J	RC	1K OHM 1/16W
R3063	AE001783	R803R9102J	RC	1K OHM 1/16W
R3083	AE002150	R803R9333J	RC	33K OHM 1/16W
R3087	AE002150	R803R9333J	RC	33K OHM 1/16W
R4001	AE001894	R803R9391F	RC	390 OHM 1/16W
R4002	AE001899	R803R9750F	RC	75 OHM 1/16W
R4003	AE001899	R803R9750F	RC	75 OHM 1/16W
R4004	AE001899	R803R9750F	RC	75 OHM 1/16W
R4005	AE001899	R803R9750F	RC	75 OHM 1/16W
R4008	AE001781	R803R9101J	RC	100 OHM 1/16W
R4009	AE006714	R803R9331F	RC	330 OHM 1/16W
R4010	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R4012	AE001887	R803R9105J	RC	1M OHM 1/16W
R4014	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4016	AE001781	R803R9101J	RC	100 OHM 1/16W
R4019	AE001794	R803R9330J	RC	33 OHM 1/16W
R4020	AE001794	R803R9330J	RC	33 OHM 1/16W
R4021	AE001794	R803R9330J	RC	33 OHM 1/16W
R4022	AE000845	R803R9103F	RC	10K OHM 1/16W
R4023	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4024	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4025	AE001890	R803R9221J	RC	220 OHM 1/16W
R4026	AE001890	R803R9221J	RC	220 OHM 1/16W
R4027	AE001890	R803R9221J	RC	220 OHM 1/16W
R4031	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4035	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4036	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4037	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4038	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4039	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4040	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4041	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4042	AE001781	R803R9101J	RC	100 OHM 1/16W
R4043	AE000845	R803R9103F	RC	10K OHM 1/16W
R4044	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4045	AE002152	R803R9561J	RC	560 OHM 1/16W
R4048	AE001797	R803R9473J	RC	47K OHM 1/16W
R4049	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4050	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4051	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4052	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4053	AE001783	R803R9102J	RC	1K OHM 1/16W
R4054	AE001783	R803R9102J	RC	1K OHM 1/16W
R4057	AE001797	R803R9473J	RC	47K OHM 1/16W
R4058	AE001890	R803R9221J	RC	220 OHM 1/16W
R4059	AE001781	R803R9101J	RC	100 OHM 1/16W
R4060	AE001888	R803R9113J	RC	11K OHM 1/16W
R4061	AE001888	R803R9113J	RC	11K OHM 1/16W
R4062	79091400	R803R9393J	RC	39K OHM 1/16W
R4063	AE002145	R803R9153J	RC	15K OHM 1/16W
R4064	AE001781	R803R9101J	RC	100 OHM 1/16W
R4070	AE001797	R803R9473J	RC	47K OHM 1/16W
R4071	79091139	R803R9151J	RC	150 OHM 1/16W
R4072	AE001794	R803R9330J	RC	33 OHM 1/16W
R4073	AE001794	R803R9330J	RC	33 OHM 1/16W
R4076	AE001794	R803R9330J	RC	33 OHM 1/16W
R4077	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4078	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4080	AE002876	R803R9472F	RC	4.7K OHM 1/16W
R4081	AE006622	R803R9392F	RC	3.9K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R8001	AE001803	R803R9750J	RC	75 OHM 1/16W
R8002	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R8003	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R8004	BZ210202	R002T4333J	RC	33K OHM 1/4W
R8005	AE001890	R803R9221J	RC	220 OHM 1/16W
R8006	AE001800	R803R9680J	RC	68 OHM 1/16W
R8007	AE001785	R803R9104J	RC	100K OHM 1/16W
R8008	AE001796	R803R9471J	RC	470 OHM 1/16W
R8009	AE000353	R002T2471J	RC	470 OHM 1/2W
R8010	AE001800	R803R9680J	RC	68 OHM 1/16W
R8011	AD301203	R002T4101J	RC	100 OHM 1/4W
R8012	AE001796	R803R9471J	RC	470 OHM 1/16W
R8013	AE001784	R803R9103J	RC	10K OHM 1/16W
R8014	AE001781	R803R9101J	RC	100 OHM 1/16W
R8015	AE001781	R803R9101J	RC	100 OHM 1/16W
R8016	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R8017	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R8021	AE001783	R803R9102J	RC	1K OHM 1/16W
R8022	AE001783	R803R9102J	RC	1K OHM 1/16W
R8023	AE001893	R803R9332J	RC	3.3K OHM 1/16W
R8024	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R8025	AE001783	R803R9102J	RC	1K OHM 1/16W
R8026	AE001896	R803R9474J	RC	470K OHM 1/16W
R8027	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R8028	AE000353	R002T2471J	RC	470 OHM 1/2W
R8029	AE000353	R002T2471J	RC	470 OHM 1/2W
R8030	AE001796	R803R9471J	RC	470 OHM 1/16W
R8031	AE001796	R803R9471J	RC	470 OHM 1/16W
R8032	79091139	R803R9151J	RC	150 OHM 1/16W
R8033	AE007385	R00202471J	RC	470 OHM 1/2W
R8034	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R8035	AE001784	R803R9103J	RC	10K OHM 1/16W
R8036	BZ210107	R002T4750J	RC	75 OHM 1/4W
R8037	AE001803	R803R9750J	RC	75 OHM 1/16W
R8038	AE001788	R803R9123J	RC	12K OHM 1/16W
R8039	AE001788	R803R9123J	RC	12K OHM 1/16W
R8040	AE001803	R803R9750J	RC	75 OHM 1/16W
R8041	AE001784	R803R9103J	RC	10K OHM 1/16W
R8042	AE001784	R803R9103J	RC	10K OHM 1/16W
R8044	AE000358	R002T4471J	RC	470 OHM 1/4W
R8045	AE001785	R803R9104J	RC	100K OHM 1/16W
R8046	AE001785	R803R9104J	RC	100K OHM 1/16W
R8047	AE003984	R002T4330J	RC	33 OHM 1/4W
R8048	AE001784	R803R9103J	RC	10K OHM 1/16W
R8049	AE001784	R803R9103J	RC	10K OHM 1/16W
R8050	AE001784	R803R9103J	RC	10K OHM 1/16W
R8051	AE001797	R803R9473J	RC	47K OHM 1/16W
R8052	AE001784	R803R9103J	RC	10K OHM 1/16W
R8053	AE000487	R002T4560J	RC	56 OHM 1/4W
R8054	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R8055	AE000849	R803R9152J	RC	1.5K OHM 1/16W
R8056	79091139	R803R9151J	RC	150 OHM 1/16W
R8057	AE001797	R803R9473J	RC	47K OHM 1/16W
R8059	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R8101	AE001783	R803R9102J	RC	1K OHM 1/16W
R8112	AE001796	R803R9471J	RC	470 OHM 1/16W
R8113	AE001796	R803R9471J	RC	470 OHM 1/16W
R8116	AE002152	R803R9561J	RC	560 OHM 1/16W
R8121	AE002152	R803R9561J	RC	560 OHM 1/16W
		CAPACITORS		
C101	AE004695	P232W1333J	CMP	0.033 UF 100V MMTS
C102	AE001544	E50HU3100M	CE	10 UF 25 V
C104	AE001768	E50HU0221M	CE	220 UF 6.3V
C105	BZ110263	E50HU2220M	CE	22 UF 16 V
C106	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C107	AE002126	CS0PB04E4K	CC	0.015 UF 50V B
C108	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C109	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C110	BZ210177	E02LU2470M	CE	47 UF 16V
C112	AE001768	E50HU0221M	CE	220 UF 6.3V
C114	AE002124	CS0PB0315K	CC	0.1 UF 25V B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C115	AE001769	E50HU1330M	CE	33 UF 10 V
C116	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C117	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C118	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C119	AE001544	E50HU3100M	CE	10 UF 25 V
C120	AE000838	CS0PB0N16K	CC	1 UF 10V B
C121	AE001273	CS0PB04K3K	CC	0.0027UF 50V B
C122	AE002125	CS0PB04B3K	CC	0.0012UF 50V B
C123	AE001770	E50HU54R7M	CE	4.7 UF 50V
C124	AE000838	CS0PB0N16K	CC	1 UF 10V B
C125	AE001274	CS0PCH4N2J	CC	390 PF 50V CH
C126	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C127	AE001731	CS0PCH4G2J	CC	180 PF 50V CH
C129	AE000838	CS0PB0N16K	CC	1 UF 10V B
C131	BZ110150	E50HU0101M	CE	100 UF 6.3V
C132	AE000838	CS0PB0N16K	CC	1 UF 10V B
C133	AE000838	CS0PB0N16K	CC	1 UF 10V B
C134	AE000838	CS0PB0N16K	CC	1 UF 10V B
C135	AE001767	E02LU5R22M	CE	0.22 UF 50V
C136	BZ110229	E02LU4220M	CE	22 UF 35V
C137	AE000838	CS0PB0N16K	CC	1 UF 10V B
C138	AD300788	E02LU5010M	CE	1 UF 50V
C139	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C140	AE002129	CS0PCH4E1J	CC	15 PF 50V CH
C141	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C142	AE000272	E50HU2470M	CE	47 UF 16V
C143	AE000838	CS0PB0N16K	CC	1 UF 10V B
C144	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C145	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C146	AE000838	CS0PB0N16K	CC	1 UF 10V B
C147	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C148	AE000838	CS0PB0N16K	CC	1 UF 10V B
C151	AE000838	CS0PB0N16K	CC	1 UF 10V B
C152	AE000272	E50HU2470M	CE	47 UF 16V
C154	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C156	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C158	AE000838	CS0PB0N16K	CC	1 UF 10V B
C160	AE001732	CS0PCH4H1J	CC	22 PF 50V CH
C161	AE001732	CS0PCH4H1J	CC	22 PF 50V CH
C162	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C163	AE001543	E50HU0470M	CE	47 UF 6.3V
C165	AE002132	CS0PF04Q4Z	CC	0.047 UF 50V F
C166	AE003843	CS0PB02U4K	CC	0.068 UF 16V B
C169	AE002132	CS0PF04Q4Z	CC	0.047 UF 50V F
C174	AE001543	E50HU0470M	CE	47 UF 6.3V
C302	AE001729	CS0PCH412J	CC	100 PF 50V CH
C303	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C307	AE002830	CS0PCH4L1J	CC	33 PF 50V CH
C308	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C309	BZ110143	E02LU0221M	CE	220 UF 6.3V
C313	AE001544	E50HU3100M	CE	10 UF 25 V
C315	AE001544	E50HU3100M	CE	10 UF 25 V
C317	AE001729	CS0PCH412J	CC	100 PF 50V CH
C318	AE001544	E50HU3100M	CE	10 UF 25 V
⚠ C501	BZ110119	E02LF2222M	CE	2200 UF 16V
⚠ C502	BZ110025	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠ C504	BZ110076	E02LF1222M	CE	2200 UF 10V
⚠ C505	AD301535	E02LU2101M	CE	100 UF 16V
C506	AE000336	E02LU1101M	CE	100 UF 10V
C508	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C509	AE004694	P1M4T0183J	CP	0.018 UF 50V
C510	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
⚠ C511	BZ110186	E62QFC470M	CE	47 UF 200V
C512	AE001544	E50HU3100M	CE	10 UF 25 V
C513	BZ110175	C03L0R7H2K	CC	220 PF 2KV R
⚠ C514	AD301535	E02LU2101M	CE	100 UF 16V
⚠ C515	AE001722	C0J0B0514K	CC	0.01 UF 500V B
⚠ C516	BZ110256	CC3LE0MH3M	CC	0.0022UF 250V
⚠ C518	AE004691	E61FF0222D	CE	2200 UF 6.3V
⚠ C519	AD301535	E02LU2101M	CE	100 UF 16V
C520	AE001737	CS0PF0N16Z	CC	1 UF 10V F

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C521	AD301535	E02LU2101M	CE	100 UF 16V
C522	BZ110205	E02LU5220M	CE	22 UF 50V
C524	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C525	BZ110172	C03L0R7U2K	CC	680 PF 2KV R
⚠C526	BZ110256	CC3LE0MH3M	CC	0.0022UF 250V
C527	AE001725	CS0PB0413K	CC	0.001 UF 50V B
⚠C531	AE001723	C0JTB05S2K	CC	560 PF 500V B
C534	AE001737	CS0PF0N16Z	CC	1 UF 10V F
⚠C540	BZ110186	E62QFC470M	CE	47 UF 200V
C544	AE000838	CS0PB0N16K	CC	1 UF 10V B
C652	AE000336	E02LU1101M	CE	100 UF 10V
C653	BZ110042	E02LU1471M	CE	470 UF 10V
C654	AE002831	CS0PCH4Q2J	CC	470 PF 50V CH
C655	AE002831	CS0PCH4Q2J	CC	470 PF 50V CH
C656	AE001544	E50HU3100M	CE	10 UF 25 V
C701	AE000838	CS0PB0N16K	CC	1 UF 10V B
C702	AE000838	CS0PB0N16K	CC	1 UF 10V B
C703	AE000838	CS0PB0N16K	CC	1 UF 10V B
C704	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C705	AE000838	CS0PB0N16K	CC	1 UF 10V B
C706	AE001734	CS0PCH4U2J	CC	680 PF 50V CH
C707	AE000838	CS0PB0N16K	CC	1 UF 10V B
C708	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C709	AE000838	CS0PB0N16K	CC	1 UF 10V B
C710	AE002832	CS0PCH4S2J	CC	560 PF 50V CH
C711	AE002832	CS0PCH4S2J	CC	560 PF 50V CH
C712	AE001770	E50HU54R7M	CE	4.7 UF 50V
C713	AE001770	E50HU54R7M	CE	4.7 UF 50V
C714	AE000835	CS0PB03L4K	CC	0.033 UF 25V B
C715	AE000838	CS0PB0N16K	CC	1 UF 10V B
C716	AE001770	E50HU54R7M	CE	4.7 UF 50V
C717	AE000838	CS0PB0N16K	CC	1 UF 10V B
C718	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C719	AE001770	E50HU54R7M	CE	4.7 UF 50V
C720	AE001544	E50HU3100M	CE	10 UF 25 V
C721	AE001544	E50HU3100M	CE	10 UF 25 V
C722	AD301535	E02LU2101M	CE	100 UF 16V
C723	AE000838	CS0PB0N16K	CC	1 UF 10V B
C724	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C725	BZ110263	E50HU2220M	CE	22 UF 16 V
C726	AE001770	E50HU54R7M	CE	4.7 UF 50V
C727	AD301762	E50HU52R2M	CE	2.2 UF 50V
C728	BZ110263	E50HU2220M	CE	22 UF 16 V
C730	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C731	BZ110150	E50HU0101M	CE	100 UF 6.3V
C732	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C733	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C735	79091097	E50HU2101M	CE	100 UF 16 V
C739	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C740	AE001544	E50HU3100M	CE	10 UF 25 V
C741	AE002832	CS0PCH4S2J	CC	560 PF 50V CH
C742	AD301762	E50HU52R2M	CE	2.2 UF 50V
C743	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C744	AE002832	CS0PCH4S2J	CC	560 PF 50V CH
C746	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C747	AE000838	CS0PB0N16K	CC	1 UF 10V B
C748	AE000838	CS0PB0N16K	CC	1 UF 10V B
C749	AE001734	CS0PCH4U2J	CC	680 PF 50V CH
C750	AE001544	E50HU3100M	CE	10 UF 25 V
C751	BZ110263	E50HU2220M	CE	22 UF 16 V
C752	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C753	AE001770	E50HU54R7M	CE	4.7 UF 50V
C754	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C755	AE001544	E50HU3100M	CE	10 UF 25 V
C756	BZ110150	E50HU0101M	CE	100 UF 6.3V
C757	AE001728	CS0PB04Q3K	CC	0.0047UF 50V B
C758	AE001770	E50HU54R7M	CE	4.7 UF 50V
C759	BZ110263	E50HU2220M	CE	22 UF 16 V
C760	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C762	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C763	BZ110263	E50HU2220M	CE	22 UF 16 V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C764	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C765	BZ110150	E50HU0101M	CE	100 UF 6.3V
C766	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C767	AE001770	E50HU54R7M	CE	4.7 UF 50V
C768	AE001728	CS0PB04Q3K	CC	0.0047UF 50V B
C771	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C2301	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2302	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2303	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2304	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C2305	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2306	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2307	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2309	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2310	BZ110034	E50HU1101M	CE	100 UF 10 V
C2313	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2314	BZ110034	E50HU1101M	CE	100 UF 10 V
C2315	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2316	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2318	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C2326	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2327	AE001543	E50HU0470M	CE	47 UF 6.3V
C2328	AE001543	E50HU0470M	CE	47 UF 6.3V
C2329	AE001543	E50HU0470M	CE	47 UF 6.3V
C2331	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2332	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2340	BZ110150	E50HU0101M	CE	100 UF 6.3V
C2341	BZ110150	E50HU0101M	CE	100 UF 6.3V
C2342	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2343	AE001543	E50HU0470M	CE	47 UF 6.3V
C2346	AE001543	E50HU0470M	CE	47 UF 6.3V
C2347	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2348	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2350	AE000838	CS0PB0N16K	CC	1 UF 10V B
C2357	AE001729	CS0PCH412J	CC	100 PF 50V CH
C2358	AE001729	CS0PCH412J	CC	100 PF 50V CH
C2359	AE001729	CS0PCH412J	CC	100 PF 50V CH
C2360	AE001729	CS0PCH412J	CC	100 PF 50V CH
C3001	AE000838	CS0PB0N16K	CC	1 UF 10V B
C3002	AE000838	CS0PB0N16K	CC	1 UF 10V B
C3004	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C3005	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C3006	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C3007	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C3008	AE001728	CS0PB04Q3K	CC	0.0047UF 50V B
C3009	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C3010	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C3013	BZ110263	E50HU2220M	CE	22 UF 16 V
C3014	AE001731	CS0PCH4G2J	CC	180 PF 50V CH
C3015	AE001735	CS0PCH4W2J	CC	820 PF 50V CH
C3016	AE001543	E50HU0470M	CE	47 UF 6.3V
C3017	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C3018	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C3019	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C3020	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C3021	AE001544	E50HU3100M	CE	10 UF 25 V
C3022	AE002831	CS0PCH4Q2J	CC	470 PF 50V CH
C3023	BZ110143	E02LU0221M	CE	220 UF 6.3V
C3024	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C3025	AE002129	CS0PCH4E1J	CC	15 PF 50V CH
C3027	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C3029	AE001543	E50HU0470M	CE	47 UF 6.3V
C3030	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C3031	AE002822	CS0PB04E3K	CC	0.0015UF 50V B
C3032	AD301762	E50HU52R2M	CE	2.2 UF 50V
C3033	BZ110190	E02LU2221M	CE	220 UF 16V
C3034	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C3036	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C3038	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C3040	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C3041	AE002822	CS0PB04E3K	CC	0.0015UF 50V B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C3044	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C3045	AE000958	E50HU5R47M	CE	0.47 UF 50V
C3049	AE001729	CS0PCH412J	CC	100 PF 50V CH
C3050	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C3052	BZ110263	E50HU2220M	CE	22 UF 16 V
C3053	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C3061	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C3065	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C3066	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4001	AE002125	CS0PB04B3K	CC	0.0012UF 50V B
C4002	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4003	AE003847	CS0PB04K4K	CC	0.027 UF 50V B
C4004	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4007	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4008	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4009	AE000272	E50HU2470M	CE	47 UF 16V
C4010	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4011	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4012	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4013	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4014	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4015	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4016	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4017	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4018	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4019	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4020	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4021	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4022	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4023	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4024	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4025	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4026	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4027	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4028	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4029	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4030	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4031	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4032	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C4033	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4034	AE004237	CS0PCH450C	CC	5 PF 50V CH
C4035	AE000840	CS0PCH4K1J	CC	27 PF 50V CH
C4036	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C4037	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4038	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4039	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4040	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4041	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4044	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4045	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4046	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4047	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4050	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4051	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4052	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4053	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4056	AE003847	CS0PB04K4K	CC	0.027 UF 50V B
C4057	AE001731	CS0PCH4G2J	CC	180 PF 50V CH
C4058	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4059	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4060	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4061	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4062	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4063	AE001768	E50HU0221M	CE	220 UF 6.3V
C4064	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4065	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4066	AE000838	CS0PB0N16K	CC	1 UF 10V B
C4067	AE001543	E50HU0470M	CE	47 UF 6.3V
C4068	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4069	AE001543	E50HU0470M	CE	47 UF 6.3V
C4070	AE001768	E50HU0221M	CE	220 UF 6.3V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C4071	AE001543	E50HU0470M	CE	47 UF 6.3V
C4072	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4074	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4075	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4076	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4077	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4078	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4080	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4081	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4082	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4083	BZ110150	E50HU0101M	CE	100 UF 6.3V
C4084	AE001543	E50HU0470M	CE	47 UF 6.3V
C4085	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C4086	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C4087	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4088	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4089	BZ110034	E50HU1101M	CE	100 UF 10 V
C4090	BZ110034	E50HU1101M	CE	100 UF 10 V
C4091	AE001729	CS0PCH412J	CC	100 PF 50V CH
C4092	AE001729	CS0PCH412J	CC	100 PF 50V CH
C4093	AE001729	CS0PCH412J	CC	100 PF 50V CH
C4094	AE001729	CS0PCH412J	CC	100 PF 50V CH
C4095	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4096	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C4097	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4098	AE002825	CS0PCH411D	CC	10 PF 50V CH
C4099	AE001726	CS0PB0414K	CC	0.01 UF 50V B
C4100	BZ110034	E50HU1101M	CE	100 UF 10 V
C4104	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C4105	AE002825	CS0PCH411D	CC	10 PF 50V CH
C8003	BZ110096	E50HU2100M	CE	10 UF 16V
C8004	AD301535	E02LU2101M	CE	100 UF 16V
C8005	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8006	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C8007	AE001544	E50HU3100M	CE	10 UF 25 V
C8008	AE002822	CS0PB04E3K	CC	0.0015UF 50V B
C8009	AE002822	CS0PB04E3K	CC	0.0015UF 50V B
C8010	AE001544	E50HU3100M	CE	10 UF 25 V
C8011	AE001768	E50HU0221M	CE	220 UF 6.3V
C8012	AE000336	E02LU1101M	CE	100 UF 10V
C8013	BZ110188	E50HU5100M	CE	10 UF 50V
C8014	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8015	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8019	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8023	AE002824	CS0PB04H4K	CC	0.022 UF 50V B
C8024	AE001543	E50HU0470M	CE	47 UF 6.3V
C8025	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C8028	AE001729	CS0PCH412J	CC	100 PF 50V CH
C8031	AE001770	E50HU54R7M	CE	4.7 UF 50V
C8032	AE001770	E50HU54R7M	CE	4.7 UF 50V
C8033	AE001733	CS0PCH4H2J	CC	220 PF 50V CH
C8034	BZ110143	E02LU0221M	CE	220 UF 6.3V
C8035	AD301762	E50HU52R2M	CE	2.2 UF 50V
C8036	AD301762	E50HU52R2M	CE	2.2 UF 50V
C8037	BZ110263	E50HU2220M	CE	22 UF 16 V
C8038	BZ110263	E50HU2220M	CE	22 UF 16 V
C8040	AE001770	E50HU54R7M	CE	4.7 UF 50V
C8042	BZ110096	E50HU2100M	CE	10 UF 16V
C8043	BZ210177	E02LU2470M	CE	47 UF 16V
C8044	79091384	CS0PCH4L2J	CC	330 PF 50V CH
C8045	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8046	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8047	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8048	AD301535	E02LU2101M	CE	100 UF 16V
C8049	79091384	CS0PCH4L2J	CC	330 PF 50V CH
C8050	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8051	AE000337	E02LU5330M	CE	33 UF 50V
C8054	AE002830	CS0PCH4L1J	CC	33 PF 50V CH
C8055	AE002830	CS0PCH4L1J	CC	33 PF 50V CH
C8056	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8057	AE001275	CS0PF0415Z	CC	0.1 UF 50V F

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C8058	AE002825	CS0PCH411D	CC	10 PF 50V CH
C8059	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8060	AE002825	CS0PCH411D	CC	10 PF 50V CH
C8062	BZ110187	E02LT0102M	CE	1000 UF 6.3V
C8063	BZ110187	E02LT0102M	CE	1000 UF 6.3V
C8064	79091384	CS0PCH4L2J	CC	330 PF 50V CH
C8065	79091384	CS0PCH4L2J	CC	330 PF 50V CH
C8075	BZ210177	E02LU2470M	CE	47 UF 16V
C8104	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8105	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C8106	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8107	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8108	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C8109	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8110	AE001729	CS0PCH412J	CC	100 PF 50V CH
C8111	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C8112	AE002830	CS0PCH4L1J	CC	33 PF 50V CH
C8113	AE000838	CS0PB0N16K	CC	1 UF 10V B
C8114	AE000838	CS0PB0N16K	CC	1 UF 10V B
C8115	AE003854	CS0PCH4B1J	CC	12 PF 50V CH
C8119	BZ110150	E50HU0101M	CE	100 UF 6.3V
C8120	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8121	AE001544	E50HU3100M	CE	10 UF 25 V
C8122	AE001725	CS0PB0413K	CC	0.001 UF 50V B
C8124	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
C8125	AE000838	CS0PB0N16K	CC	1 UF 10V B
C8126	AE000838	CS0PB0N16K	CC	1 UF 10V B
C8127	AE001730	CS0PCH4E2J	CC	150 PF 50V CH
		DIODES		
D501	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D502	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠ D503	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D504	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D505	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠ D506	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠ D507	BZ410007	D23TGP15J0	DIODE,SILICON	RGP15J-G23
D508	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D509	BZ410103	D2WXGP10J0	DIODE,RECTIFIER	RGP10J-EIC
⚠ D510	BZ410113	D97U02201B	DIODE,ZENER	MTZJ22B T-77
⚠ D511	BZ410115	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737
D512	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D513	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D514	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
⚠ D515	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
D516	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D518	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D519	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
⚠ D522	AE006060	D28T0ERB20	DIODE,RECTIFIER	10ERB20-TA1B2
⚠ D523	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D524	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D526	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
⚠ D527	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D528	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D529	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D602	AE001703	0021E5Q212	LED	LTL-1CHGT-002A
D656	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D685	AE001703	0021E5Q212	LED	LTL-1CHGT-002A
D2303	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D2304	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D3001	AD301638	0010E00330	INFRARED LED	LTE-3271T-012A-O
D3002	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3007	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3009	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D4002	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D4003	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D4004	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D4005	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8004	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D8005	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D8006	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D8101	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		DIODES		
D8111	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
D8112	BZ410086	DD7R0S3550	DIODE,SILICON	1SS355 TE-17
		ICS		
IC101	AE005890	I03F3206ME	IC	LA71206M-MPB-E
⚠IC501	AD302211	I1KJ9A431A	IC	KIA431A-AT
⚠IC502	BZ611089	I1KA98R09A	IC	KIA78R09API
⚠IC503	AE002809	000220002W	PHOTO COUPLER	PS2561AL1-1-V(W)
IC701	AE004692	I03F670BM0	IC	LA72670BM-L-MPB-E
⚠IC2301	AE003581	I03F065650	IC	LA6565-TE-L-E
IC2304	AE005769	I07J003580	IC	BA10358FV-E2
IC3001	AE007384	I54F50157A	IC	OEC0157A
IC3003	AD301641	I9UF032310	IC	PST3231NR
IC3099	AE005421	I57J0L02F0	IC	BR24L02F-WE2
IC4001	AE005760	ICQK068620	IC	ZR36862PQCG
IC4002	AE005421	I57J0L02F0	IC	BR24L02F-WE2
⚠IC4003	AE006061	I07F9E00W0	IC	BA33E00WHFP-TR
IC4007	AE007187	S2H201HF03	MEMORY DATA	SST39VF800A-70-4C-EKE
IC4008	AE006454	IFLJ0622H6	IC	K4S161622H-UC60
IC4009	AE006454	IFLJ0622H6	IC	K4S161622H-UC60
IC8001	AE006711	I04J045800	IC	RC4580IDR
IC8002	AD301988	I0UF015010	IC	MM1501XNRE
IC8003	AE005771	I0UF015110	IC	MM1511XNRE
IC8005	AD301988	I0UF015010	IC	MM1501XNRE
IC8102	AE003584	I17F017530	IC	PCM1753DBQR
		TRANSISTORS		
Q101	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q102	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q103	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q104	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q105	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q107	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q109	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q301	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠Q501	AE002251	T25F035630	FET	2SK3563(ORION_Q)
⚠Q502	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
⚠Q503	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q504	BZ510077	TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT
⚠Q505	AE006717	TD3T018350	TRANSISTOR,SILICON	2SD1835S/T-AA
Q506	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
⚠Q507	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q509	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
⚠Q510	AE006717	TD3T018350	TRANSISTOR,SILICON	2SD1835S/T-AA
Q513	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q514	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q651	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q652	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q653	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q654	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q655	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q656	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q657	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q658	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q659	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q660	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q661	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q662	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q663	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q664	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q665	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q666	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q2301	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2302	AE003592	T67J048TL0	TRANSISTOR,SILICON	2SA2048TL
Q2303	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q2304	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q2305	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q3001	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q3002	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q3003	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q3004	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q3005	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q3006	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		TRANSISTORS		
Q3007	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q3008	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q8001	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8002	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
Q8003	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q8004	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q8005	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8006	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8007	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q8008	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8009	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8010	BZ510081	TPYJA05001	COMPOUND TRANSISTOR	DTA143EKAT146
Q8011	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q8012	AE002626	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8019	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q8020	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q8021	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q8022	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q8023	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q8024	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
Q8101	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
		COILS &TRANSFORMERS		
L101	AE004672	031626010R	COIL,BIAS OSC	1626010
L102	BZ310041	02167F101J	COIL	100 UH
L103	AE002102	021LA65R6K	COIL	5.6 UH
L104	BZ310039	02167F220J	COIL	22 UH
L107	BZ310039	02167F220J	COIL	22 UH
L301	BZ310039	02167F220J	COIL	22 UH
⚠L501	AE004671	029X000117	COIL,LINE FILTER	SS11VL-05230
L505	BZ310039	02167F220J	COIL	22 UH
L506	BZ310150	02167E220K	COIL	22 UH
L701	BZ310183	021LA6220J	COIL	22 UH
L702	BZ310183	021LA6220J	COIL	22 UH
L703	BZ310039	02167F220J	COIL	22 UH
L704	BZ310039	02167F220J	COIL	22 UH
L705	BZ310039	02167F220J	COIL	22 UH
L3002	BZ310150	02167E220K	COIL	22 UH
L3003	AE000773	021LA6120J	COIL	12 UH
L4001	BZ310191	02167F2R2J	COIL	2.2 UH
L8001	BZ310147	021LA6R33M	COIL	0.33 UH
L8002	BZ310147	021LA6R33M	COIL	0.33 UH
L8006	BZ310041	02167F101J	COIL	100 UH
L8007	BZ310041	02167F101J	COIL	100 UH
L8008	BZ310041	02167F101J	COIL	100 UH
L8009	BZ310041	02167F101J	COIL	100 UH
L8010	BZ310041	02167F101J	COIL	100 UH
L8102	AE000828	02167F1R0K	COIL	1 UH
L8103	AE000828	02167F1R0K	COIL	1 UH
L8104	AE000828	02167F1R0K	COIL	1 UH
L8105	AE000828	02167F1R0K	COIL	1 UH
⚠T501	AE004673	0481291244	TRANSFORMER,SWITCHING	81291244
		JACKS		
J651	AE006693	060J421038	RCA JACK	MSP-281V30-A
J652	AE006692	060J401097	RCA JACK	MSP-281V41-B
J653	AE006692	060J401097	RCA JACK	MSP-281V41-B
J8001	AE002758	060J411031	RCA JACK	MSP-213V1-432_NI_LF
J8002	AE002759	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J8006	AE002760	060J411033	RCA JACK	MSP-213V1-732_NI_LF
J8007	AE002761	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J8008	AE002813	063D700008	JACK	MDC-070V-B_LF
		SWITCHES		
SW601	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW602	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW603	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW604	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW605	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW685	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW686	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW687	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW689	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW690	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		SWITCHES		
SW691	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW3001	BZ612016	0508S11001	SWITCH (LEAF)	LSA-1144EAU
		P.C.BOARD ASSEMBLIES		
PCB010	AE007390	A2F401H010	PCB ASS'Y	DME043A
PCB130	AE007387	A2F402H130	PCB ASS'Y	DME031A
PCB270	AE007388	A2F402H270	PCB ASS'Y	DEE042A
PCB280	AE007389	A2F402H280	PCB ASS'Y	DEE043A
		MISCELLANEOUS		
B501	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B2301	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B2302	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B2303	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B2304	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B2305	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4001	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4002	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4003	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4005	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4006	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4007	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4008	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4009	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4010	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4011	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4012	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4013	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4014	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4016	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B4018	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
B8103	AE005476	0246C51024	CORE,BEADS	MMZ1608R102CT
BT601	AE005640	141R004016	BATTERY,MANGAN	GR03X-SP2
CD102	AE004682	122F041508	CORD,JUMPER	2F041508
CD103	AE007029	W9L6012042	FLAT CABLE	AWM2468 AWG26 2C BLACK 120MM
⚠CD501	AE004681	1209414910	CORD,AC BUSH	9414910
CD601	AE006700	122H061106	CORD,JUMPER	2H061106
CD681	AE006699	122H050801	CORD,JUMPER	2H050801
CP101	BZ614011	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP102	AE004674	069J740599	CONNECTOR PCB SIDE	IMSA-9604S-04C
CP103	AD301649	067U002019	WIRE HOLDER	B2013H02-2P
CP501	BZ614214	069S2B0629	CONNECTOR PCB SIDE	A2001WV2-11P
CP601	AE006694	069EV63050	CONNECTOR PCB SIDE	00_6232_006_102_800+
CP651	AE004675	069J750589	CONNECTOR PCB SIDE	IMSA-9604S-05F
CP652	AE006695	069WV6002A	CONNECTOR PCB SIDE	TOC-B06X-B1
CP681	AE001711	069J750019	CONNECTOR PCB SIDE	IMSA-9604S-05Z13
CD4002	AE007190	06C32B1104	CORD CONNECTOR	C32B1104
CD6002	AE001243	06CPL02006	CABLE	CPL02006
CD6003	AE006433	06CPBA2006	CORD,RCA PIN	TD-OR0201R
CD8001	AE004683	122F0E1001	CORD,JUMPER	2F0E1001
CP2301	AE003571	069GYOT119	CONNECTOR PCB SIDE	09-5000-024-001-001
CP2302	AE005934	069EV53030	CONNECTOR PCB SIDE	00_6232_005_006_800+
CP2303	AE005935	069EV63030	CONNECTOR PCB SIDE	00_6232_006_006_800+
⚠CP3001	BZ614289	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP8001	AE004677	069J7E0599	CONNECTOR PCB SIDE	IMSA-9604S-14C
CP8101	AE004676	069J7E0589	CONNECTOR PCB SIDE	IMSA-9604S-14F
⚠F501	AE001715	081PC2R505	FUSE	51MS025L
FH501	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS651	AE002815	077Q037009	REMOTE RECEIVER	PIC-37043LO-H
TM601	AE006697	076D0KU010	TRANSMITTER	SE-R0170
⚠TU301	AE006569	0162300044	RF UNIT	115-V-HA35ARE
V651	AE006690	0040E34005	LED DISPLAY	LTG-0338AM-J
X101	AE001717	100DT3R528	CRYSTAL	HC-49/U
X3001	AE004679	100GT01006	CRYSTAL	B10000C001
X4001	AD301803	100BT02701	CRYSTAL	HC-49U/S

ELECTRICAL REPLACEMENT PARTS LIST

RESISTOR

RC.....	CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CMPL.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN

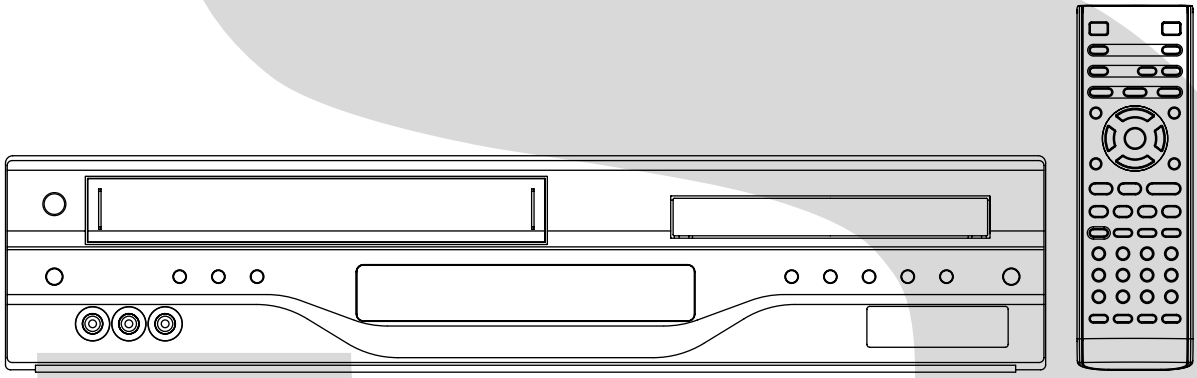
TOSHIBA

FILE NO. 810-200517

CIRCUIT DIAGRAMS

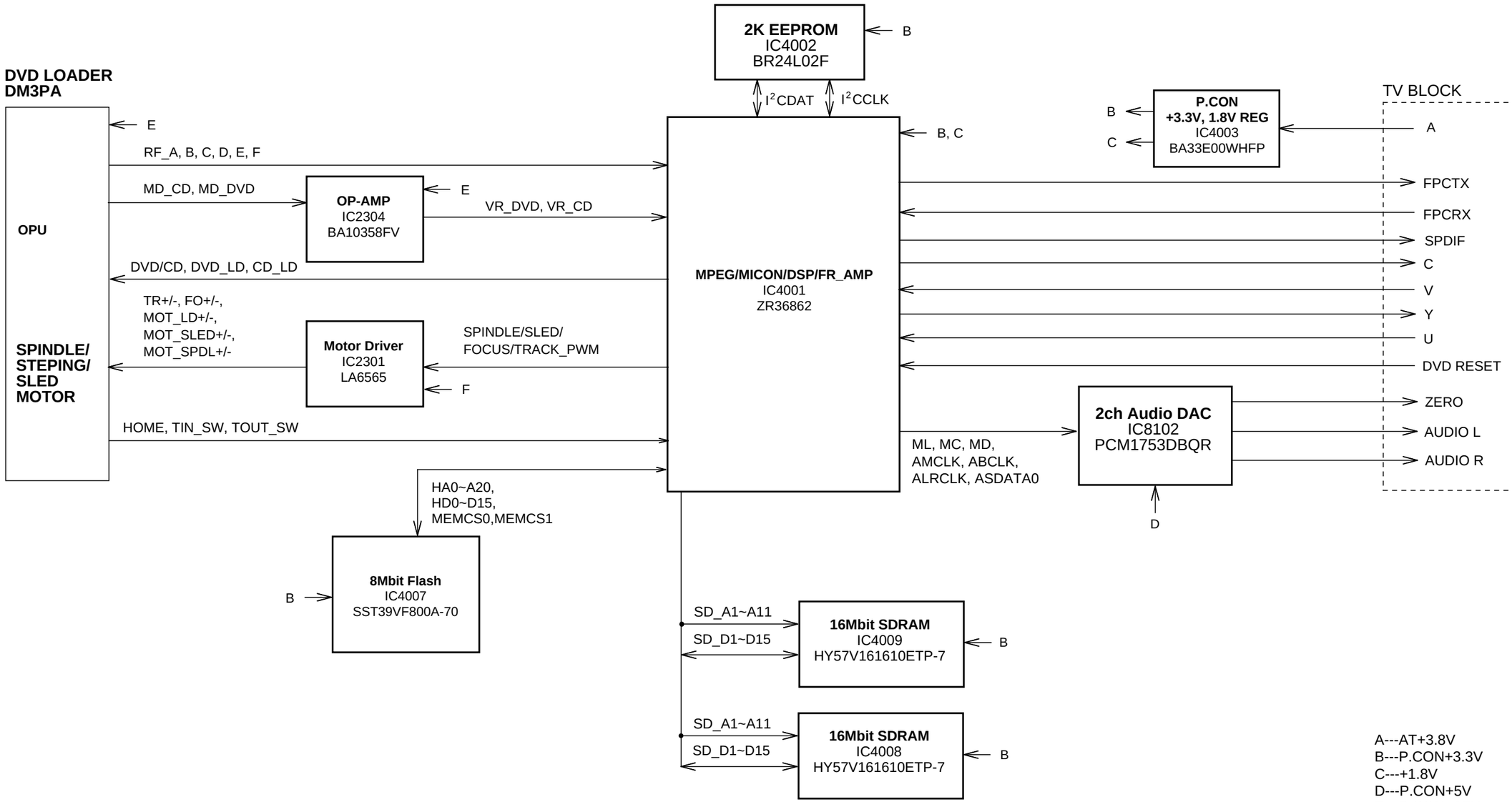
DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V393SU



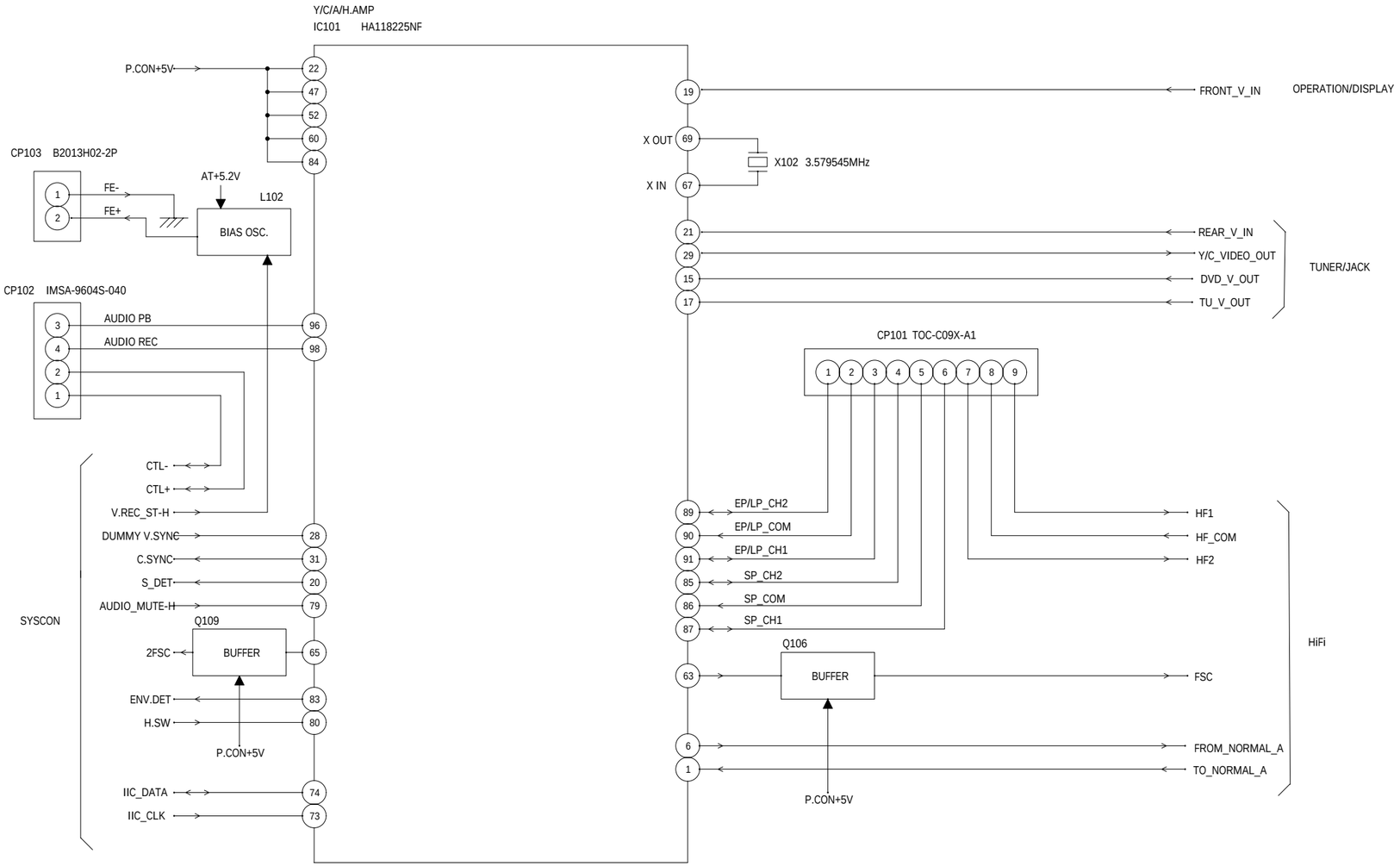
DOCUMENT CREATED IN JAPAN, March, 2005

DVD BLOCK DIAGRAM

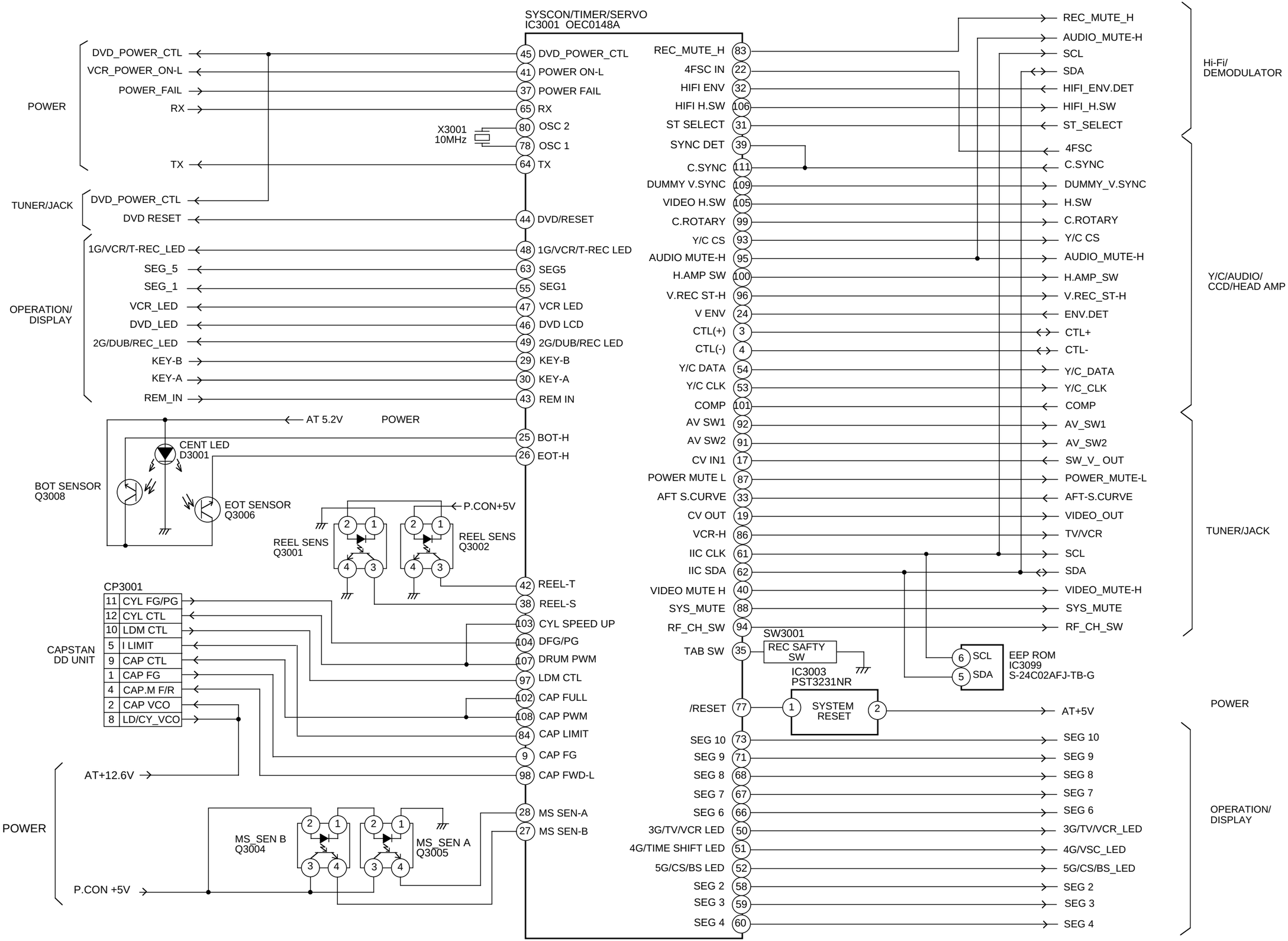


A---AT+3.8V
B---P.CON+3.3V
C---+1.8V
D---P.CON+5V
E---P.CON+A5V
F---P.CON+9V

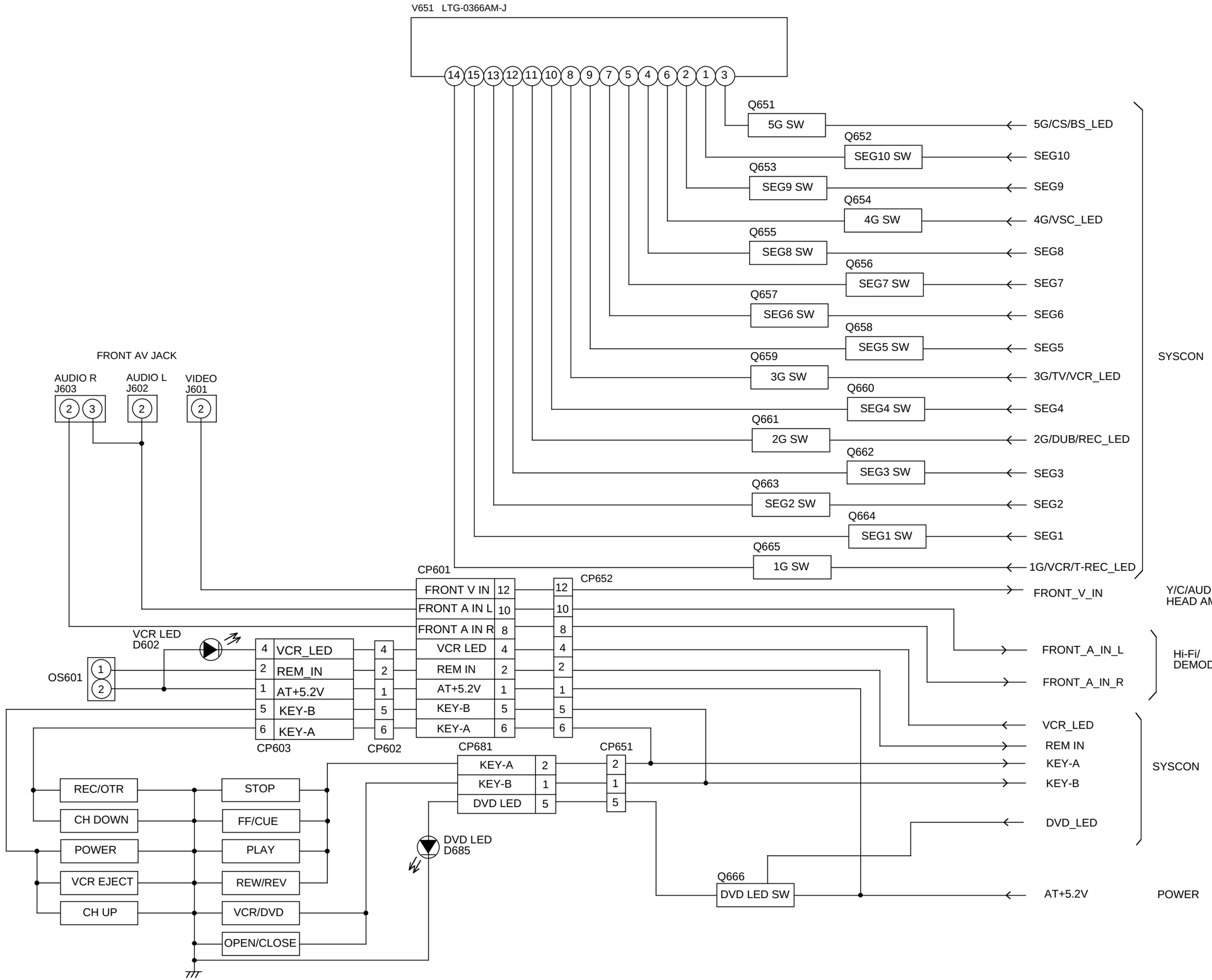
Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM



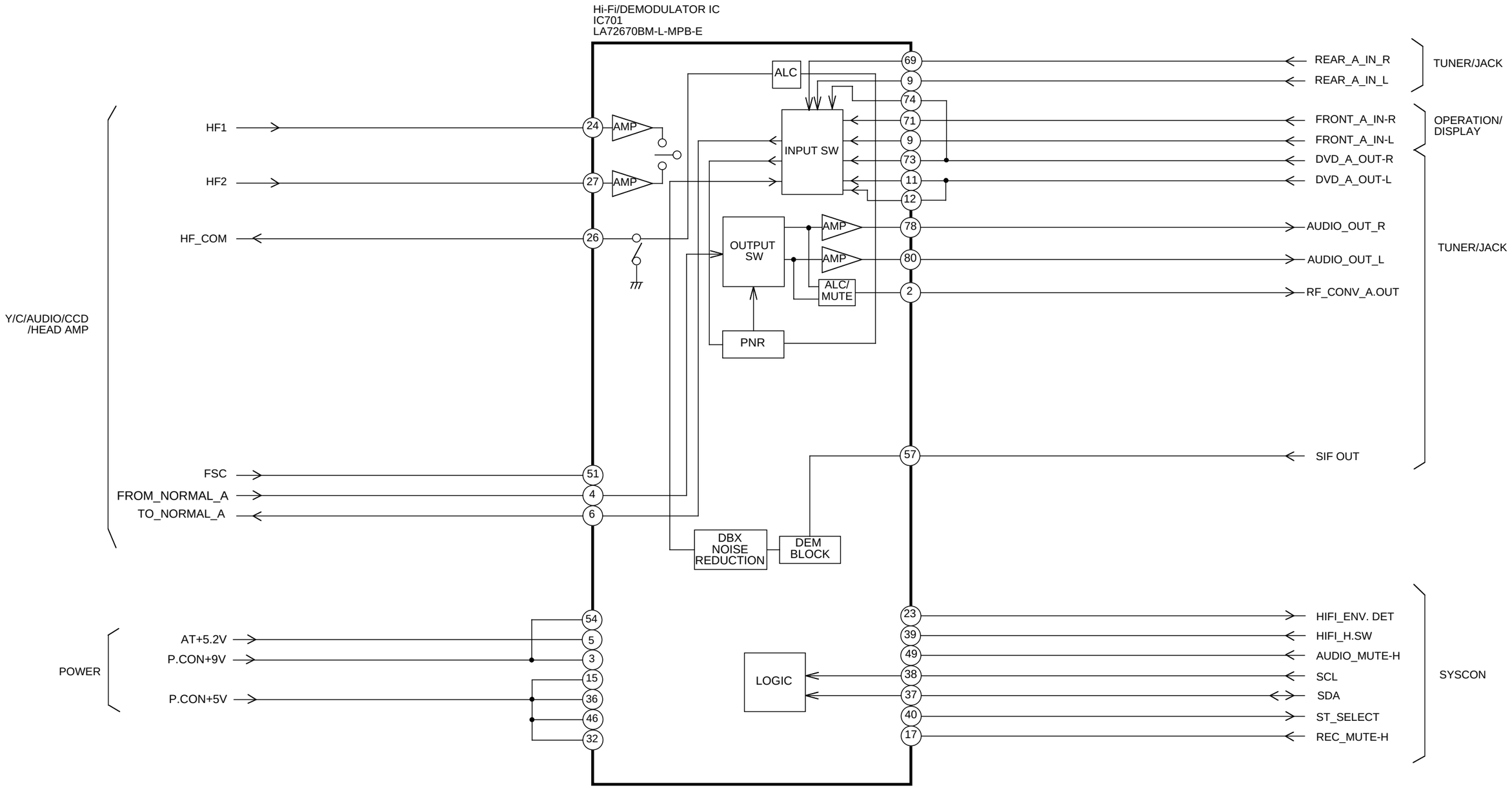
SYSTEM CONTROL BLOCK DIAGRAM



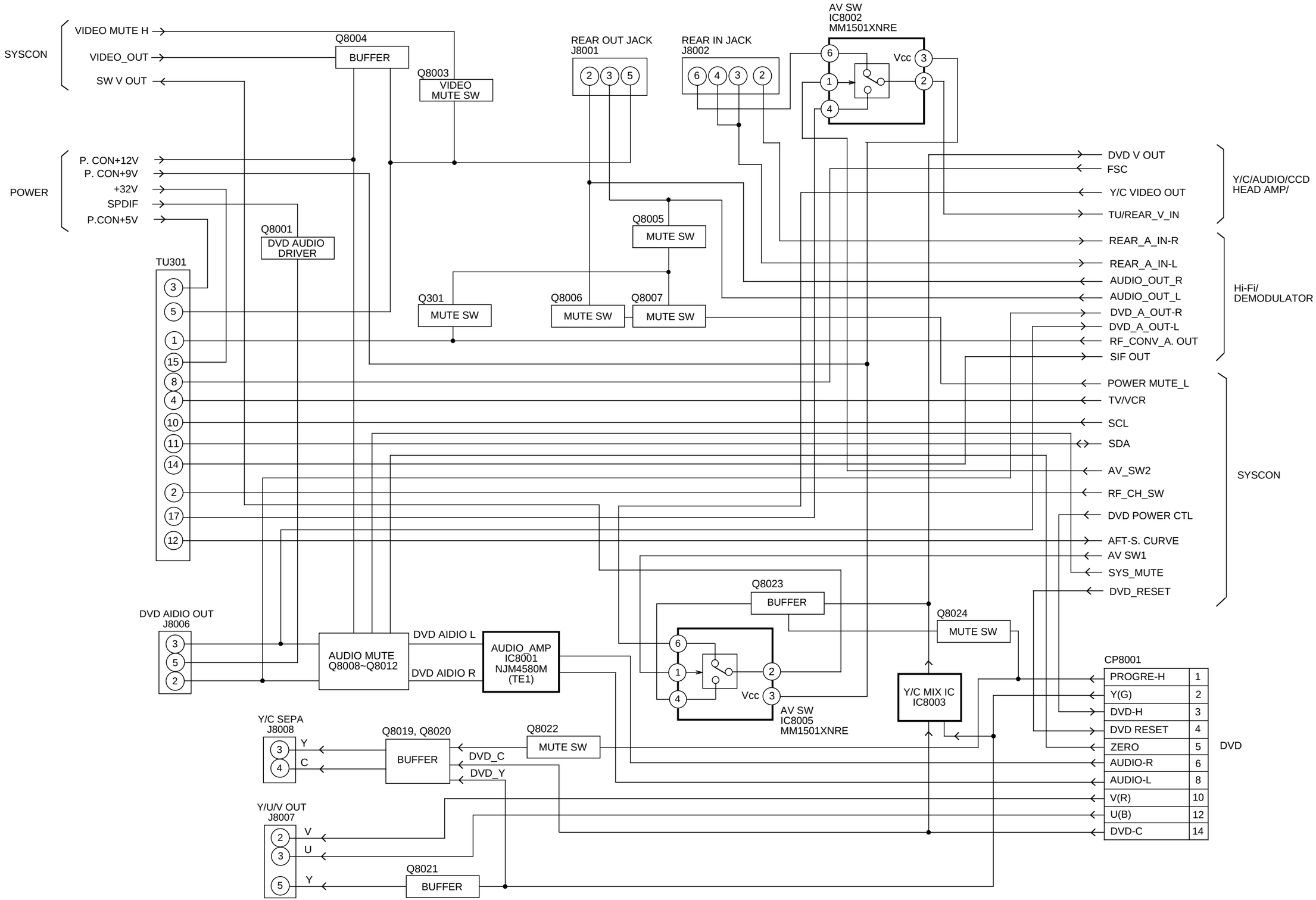
OPERATION/DISPLAY BLOCK DIAGRAM



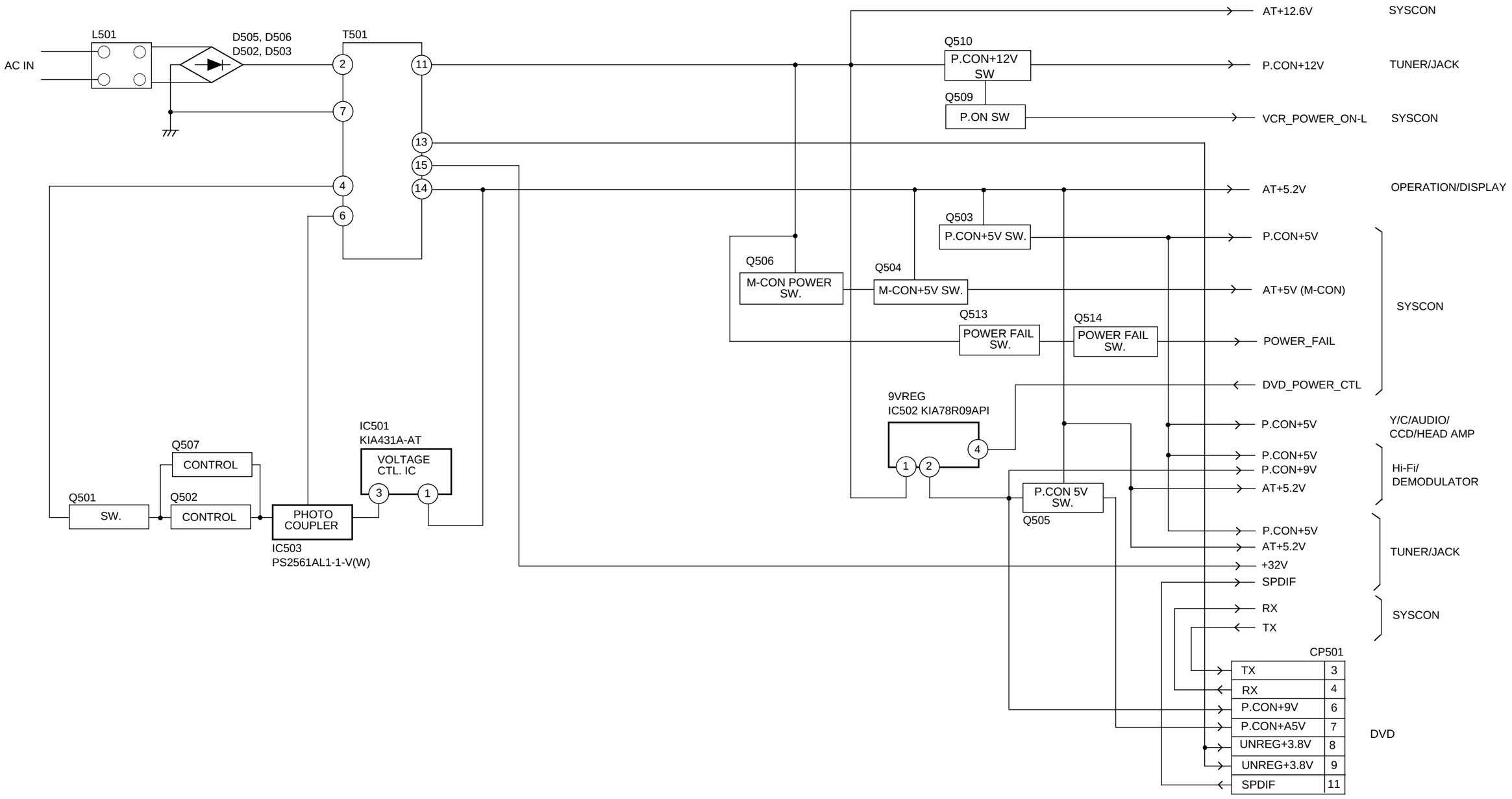
Hi-Fi/DEMODULATOR BLOCK DIAGRAM



TUNER/JACK BLOCK DIAGRAM

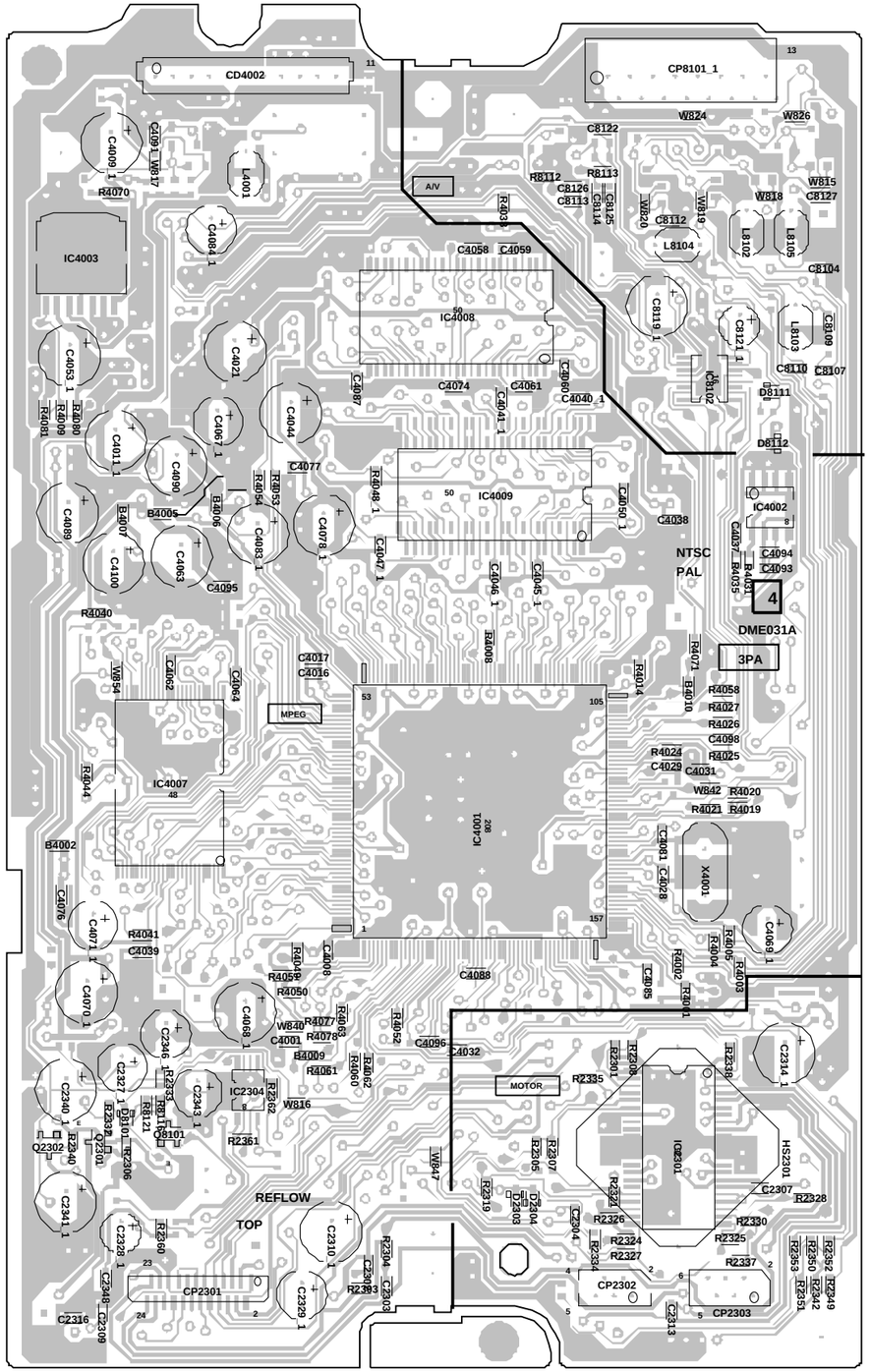


POWER BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS

DVD (TOP SIDE)


CD4002
CP8101_1
W824
W826
C8122
A/V
IC4003
IC4008
IC4009
IC4007
IC4001
IC2304
IC4002
MPEG
REFLOW
TOP
MOTOR
NTSC
PAL
DME031A
3PA
CP2301
CP2302
CP2303
L4001
X4001
D4002
D4004
D8111
D8112
B4005
B4006
B4007
B4008
B4009
B4002
C4095
C4096
C4032
C4088
C4038
C4074
C4061
C4058
C4059
C4077
C4017
C4016
C4001
C8104
C8107
C8110
C8109
C8127
C8126
C8113
C8114
C8125
C8112
C8119_1
C8121_1
C8102
L8104
L8102
L8103
L8105
R8112
R8113
W815
W818
W819
W820
R4070
R4053
R4054
R4055
R4050
R4051
R4052
R4048_1
R4058
R4027
R4026
C4098
R4025
R4024
C4029
C4031
W842
R4020
R4021
R4019
R4014
R4044
R4041
C4039
C4076
C4071_1
C4070_1
C4068_1
C4008
C4085
R4002
R4001
R4004
R4005
R4003
C4069_1
W840
R4077
R4078
R4063
C4096
B4009
R4061
R4062
W816
C2346
C2327_1
C2340_1
C2341_1
C2328_1
C2348
C2316
C2309
C2343_1
C2310_1
C2329_1
C2330
C2303
C2313
C2314_1
C2307
C2328
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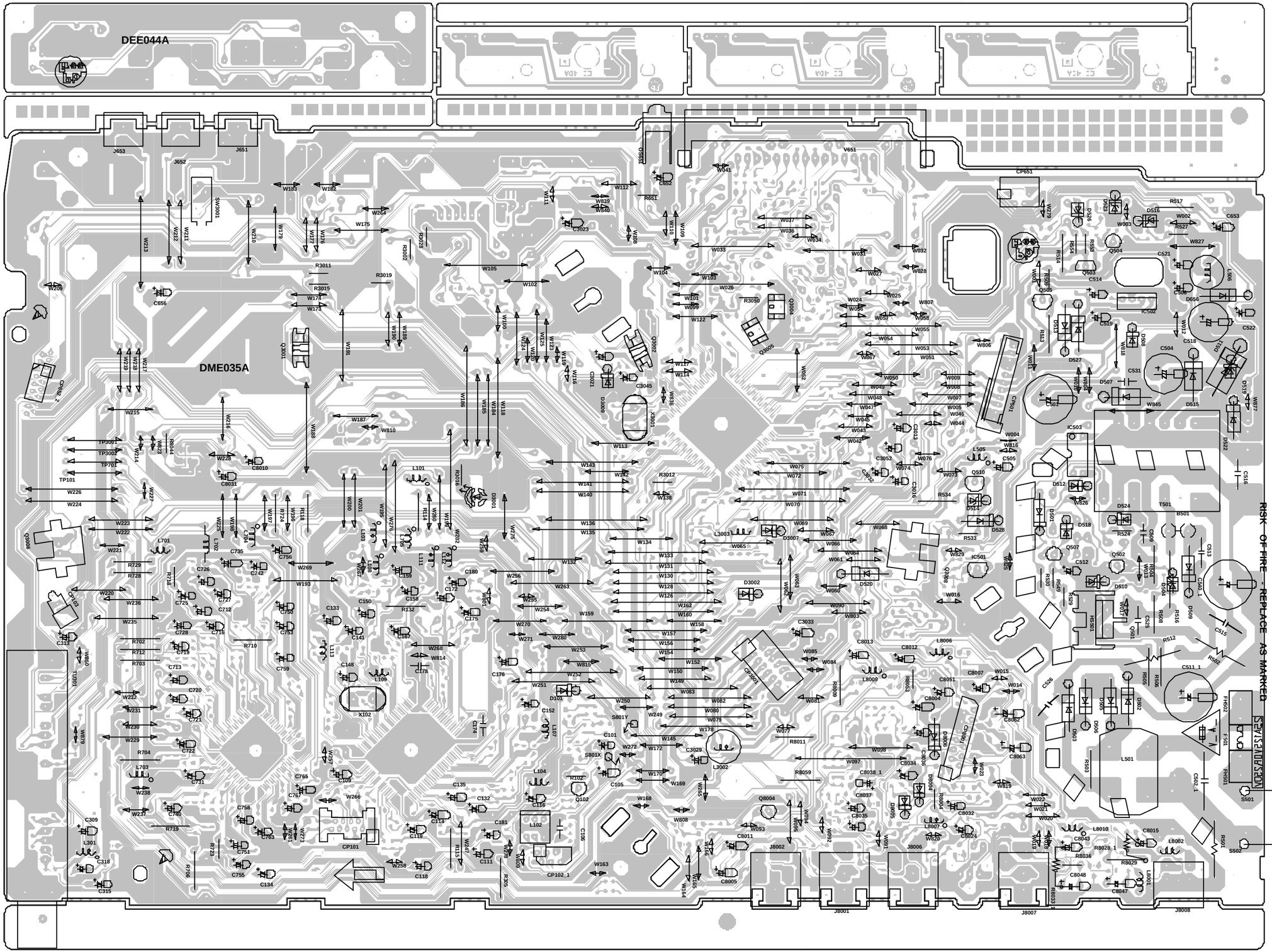
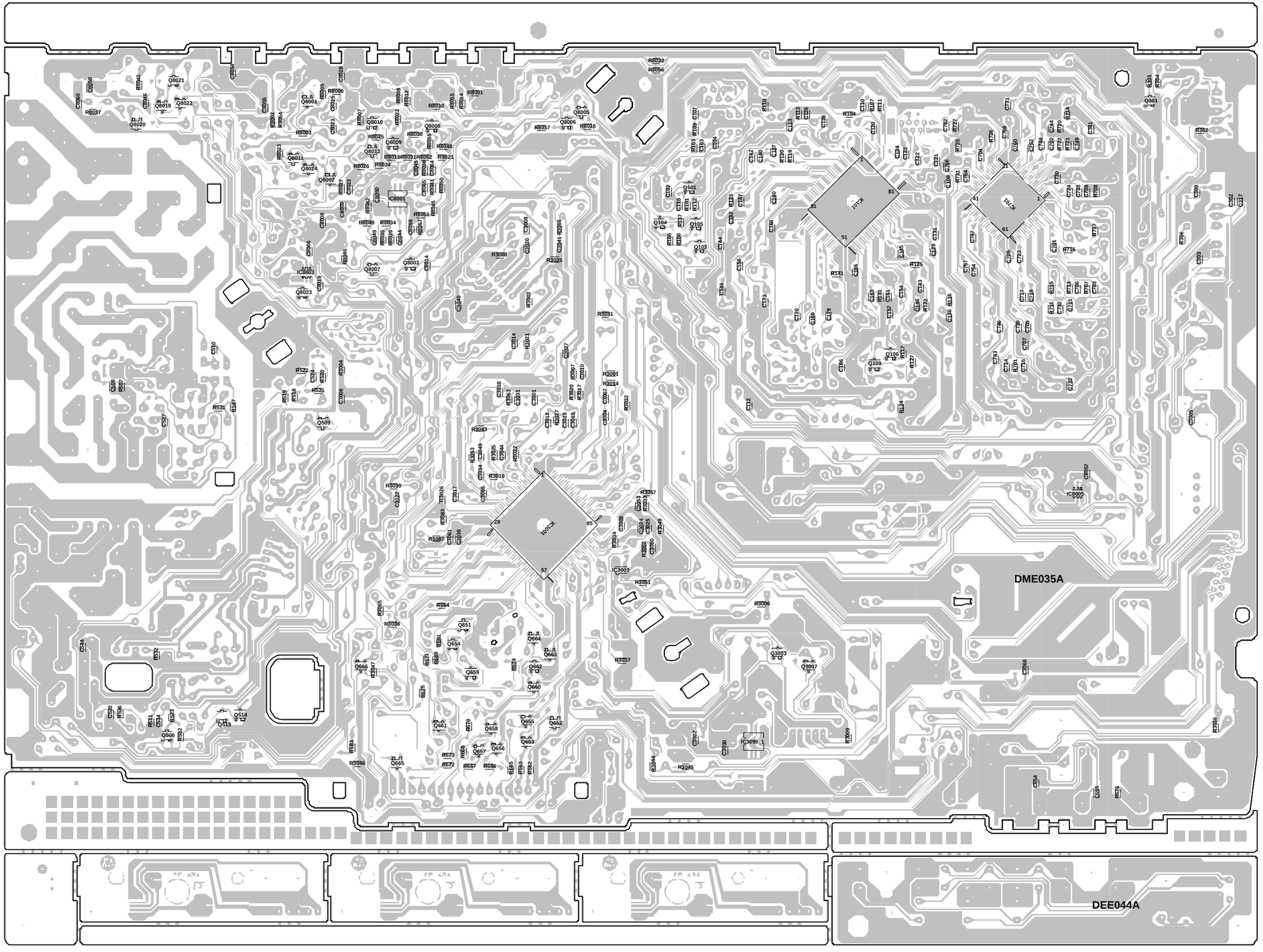
C2388
C2389
C2390
C2391
C2392
C2393
C2394
C2395
C2396
C2397
C2398
C2399
C2400
C2401
C2402

PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE

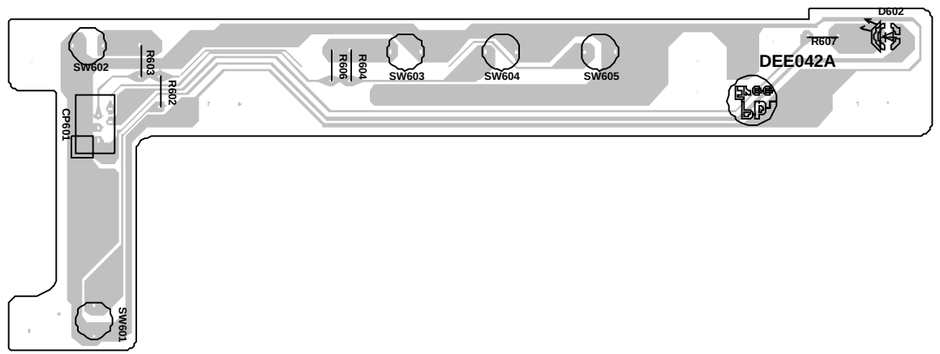


PRINTED CIRCUIT BOARDS
VCR (CHIP MOUNTED PARTS)
SOLDER SIDE

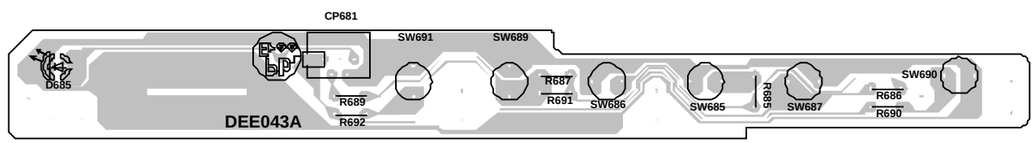


PRINTED CIRCUIT BOARDS

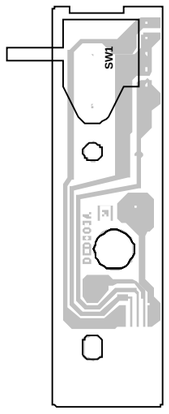
OPERATION 1
SOLDER SIDE



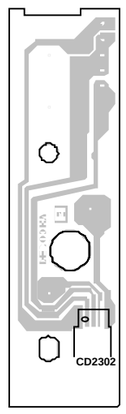
OPERATION 2
SOLDER SIDE



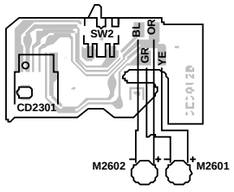
LOADING MOTOR (INSERTED PARTS)
SOLDER SIDE



LOADING MOTOR (CHIP MOUNTED PARTS)
SOLDER SIDE



SW
SOLDER SIDE



MPEG/MICON/DSP/RF_AMP SCHEMATIC DIAGRAM

(DVD PCB)

MPEG/MICON/DSP/RF_AMP
IC4001
ZR36862PQCG

FROM/TO MEMORY

FROM/TO AUDIO/VIDEO

FROM/TO MOTOR DRIVER

FROM/TO POWER

REG+3.3V +1.9V
IC4003 BA33E00WHFP

EEPROM IC4002 BR24L02F-WE2

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

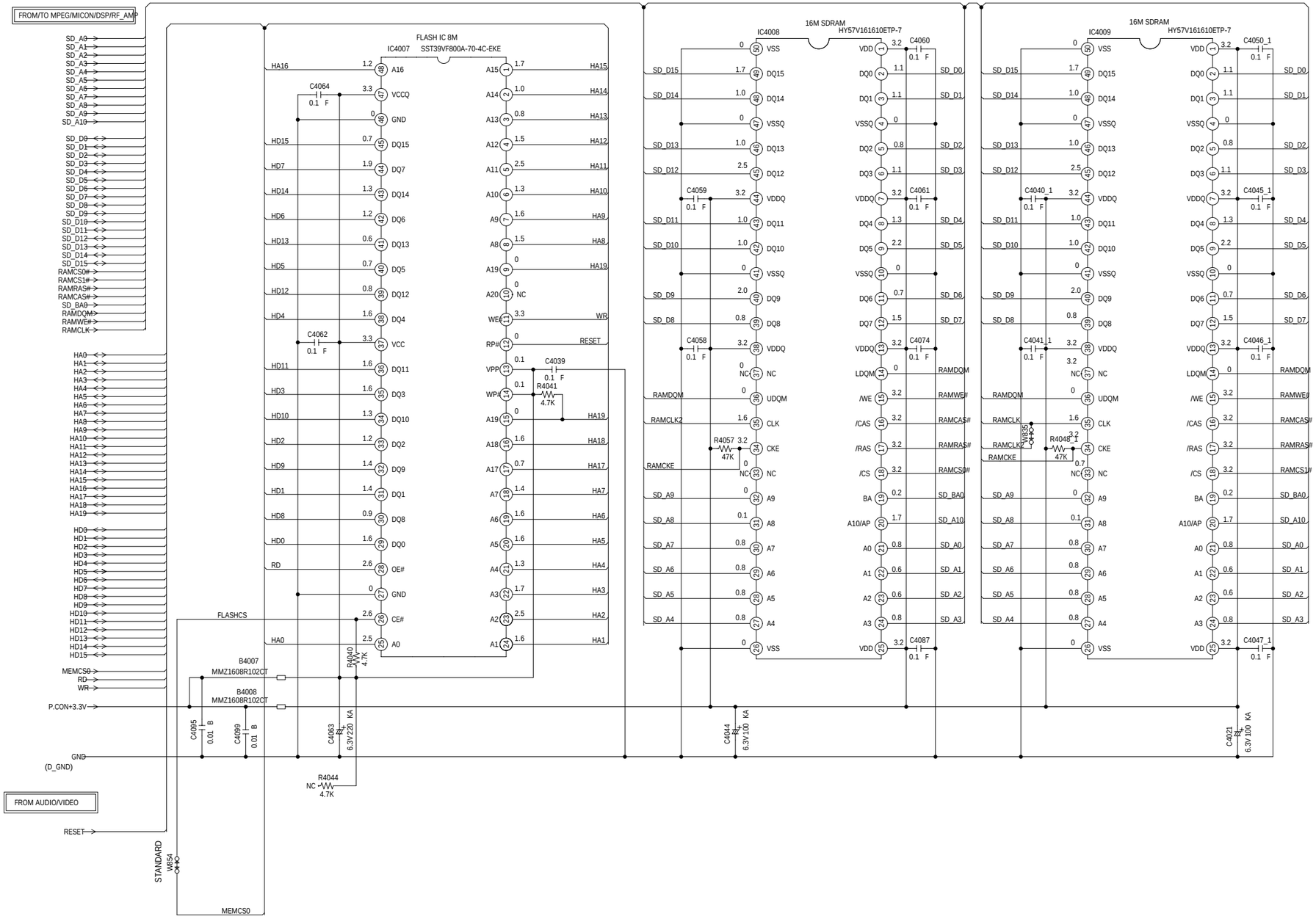
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
DME031

MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
DME031

MOTOR DRIVER SCHEMATIC DIAGRAM

(DVD PCB)

DM3P(05SD)

FROM/TO LOADER

CP2301
09-5000-024-001-001

1	GND
2	F
3	Vref
4	VCC
5	E
6	D
7	C
8	SW1(DVD/CD)
9	VRF(RF_OUT)
10	B
11	A
12	VR(DVD)
13	VR COM
14	VR(CD)
15	GND
16	LD(CD)
17	PD/GND
18	LD(DVD)
19	GND
20	NC
21	T DRV
22	T RTN
23	F DRV
24	F RTN

CP2302
00_6232_005_006_800+

5	LD-
4	LD+
3	OPEN
2	GND(D)
1	CLOSE

CP2303
00_6232_006_006_800+

6	SW(GND)
5	LIMIT SW
4	SLD-
3	SLD+
2	SP1-
1	SP1+

FROM/TO AUDIO/VIDEO

CD_LD_CTL

FROM/TO MPEG/MICON/DSP/RF_AMP

DVD_CD
DVD_LD
CD_LD
VR_DVD
VR_CD
RF
OPU_A
OPU_B
OPU_C
OPU_D
OPU_E
OPU_F
VC
HOME
GND
(GND,D_GND)
TOUT_SW
TIN_SW
P.CON+A5V
TRACK_PWM
FOCUS_PWM
P.CON+3.3V
DRVSB
SPINDLE_PWM
SLED_PWM
ADCIN_7
ADCIN_5
ADCIN_6
VCC+9V
M_GND
SPDL_SENS+
SPDL_SENS-
TRAY_CLOSE
TRAY_OPEN

MOTOR DRIVE IC
IC2301 LA6565

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

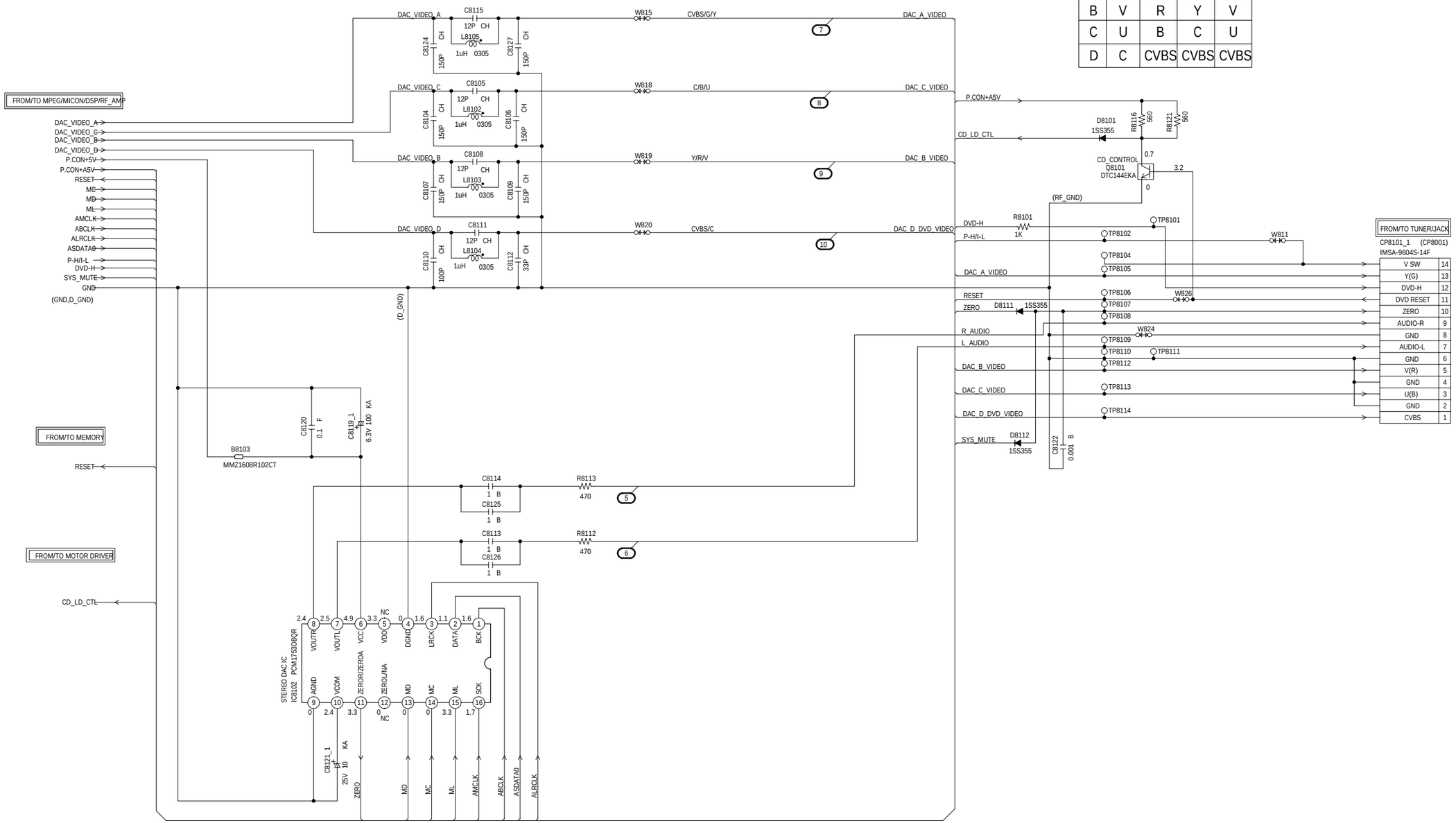
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

PCB130
DME031

AUDIO/VIDEO SCHEMATIC DIAGRAM

(DVD PCB)

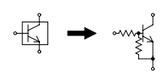
	1	2	3	4
A	Y	G	CVBS	Y
B	V	R	Y	V
C	U	B	C	U
D	C	CVBS	CVBS	CVBS



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

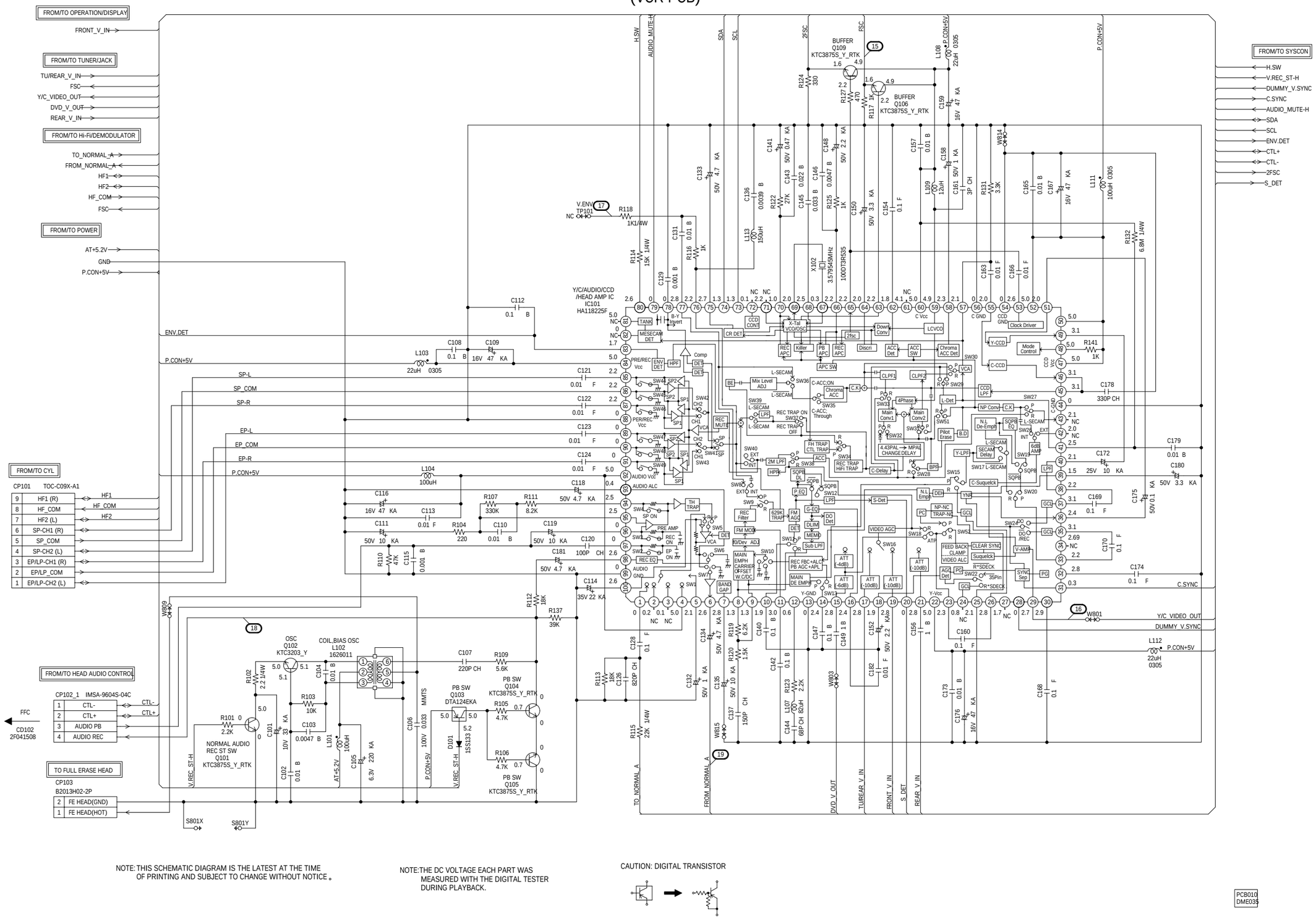
CAUTION: DIGITAL TRANSISTOR



PCB130
DME031

Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM

(VCR PCB)



SYSCON SCHEMATIC DIAGRAM
(VCR PCB)

FROM/TO POWER
TX
RX
DVD_POWER_CTL
AT+12.6_V
P.CON+5V
AT+5V[M-CON]
VCR_POWER_ON-L
POWER_FAIL
AT+5.2V
GND
MOTOR_GND

FROM/TO DECK
CP3001
TMC-J12P-B2
1 CAP FG
2 CAP VCO
3 VCC
4 CAP.M/F/R
5 I LIMIT
6 MOTOR GND
7 GND
8 LD/CY VCO
9 CAP CTL
10 LDM CTL
11 CYL FG/PG
12 CYL CTL

SYSCON/TIMER/SERVO IC
IC3001
OEC0155A

FROM/TO Y/C/AUDIO/CCD/HEAD AMP
DUMMY_V.SYNC
C.SYNC
V.REC_ST-H
AUDIO_MUTE-H
CTL-
CTL+
ENV.DET
H.SW
2FSC
S_DET

FROM/TO TUNER/JACK
DVD_POWER_CTL
RF_CH_SW
SW_V_OUT
AV_SW1
SCL
SDA
AFT-S.CURVE
TV/VCR
VIDEO_OUT
POWER_MUTE-L
VIDEO_MUTE-H
DVD_RESET
SYS_MUTE

FROM/TO HI-Fi/DEMODULATOR
REC_MUTE_H
HIFI_ENV.DET
HIFI_H.SW
AUDIO_MUTE-H
SCL
SDA
ST_SELECT

FROM/TO OPERATION1/DISPLAY
DVD_LED
VCR_LED
KEY-A
KEY-B
REM_IN
1G/VCR/T-REC_LED
2G/DUB/REC_LED
3G/TV/VCR_LED
4G/VSC_LED
5G/CS/BS_LED
SEG_1
SEG_2
SEG_3
SEG_4
SEG_5
SEG_6
SEG_7
SEG_8
SEG_9
SEG_10

JG3002 JG3003 JG3004 JG3005 JG3006 JG3007 JG3008
TX
MD0
RESET
FWE
AT+5V[M-CON]

CAUTION: DIGITAL TRANSISTOR
CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

PCB010
DME035

TUNER/JACK SCHEMATIC DIAGRAM (VCR PCB)

FROM/TO AUDIO/VIDEO

CP8001 (CP8101_1)
IMSA-9604S-14C

1	PROGRE H
2	Y(G)
3	DVD-H
4	DVD RESET
5	ZERO
6	AUDIO-R
7	GND
8	AUDIO-L
9	GND
10	V(R)
11	GND
12	U(B)
13	GND
14	CVBS

FFC — CD8001 2F0E1001

W819 — DVD_Y, DVD_POWER_CTL, DVD_RESET, ZERO, DVD_V, DVD_U, DVD_C

C8063 6.3V 1000 YK
C8062 6.3V 1000 YK
C8008 0.0015 B
C8009 0.0015 B

AUDIO_AMP IC IC8001 RC4580IDR
A_GND, VCC

C8035 50V 2.2 KA
C8065 330P CH
R8052 10K
R8055 1.5K
R8050 10K
R8041 10K
C8045 150P CH
R8038 12K
C8064 330P CH
C8037 16V 22 KA
R8030 470
R8045 100K
R8046 100K
R8057 47K
R8053 56 1/4W
P.CON+12V
C8038_1 16V 22 KA
R8031 470
R8049 10K
R8047 47K
C8049 330P CH
C8044 330P CH
C8056 0.1 F
C8004 16V 100 KA
R8013 10K
R8042 10K
R8043 12K
R8035 10K
R8034 1.5K
C8036 50V 2.2 KA
R8048 10K
C8051 50V 33 YK
C8050 150P CH

P.CON+12V
L8010 100uH 0305
C8043 16V47 YK
C8046 0.1 F
SW Q8022 DTC124EKA
R8028_1 680 1/4W
R8029 470 1/2W
C8015 16V 100 YK
BUFFER Q8019 KTA1504S_Y_RTK
BUFFER Q8020 KTA1504S_Y_RTK
R8037 75
L8002 0.33uH
C8047 16V 470 YK
R8033_1 680 1/4W
L8001 0.33uH
R8040 75
BUFFER Q8021 KTA1504S_Y_RTK
R8039 75 1/4W
C8048 16V 470 YK
C8060 10P CH
C8058 10P CH
C8055 33P CH
C8054 33P CH
Y/C SEPA J8008 MDC-070V-B_LF
YUV OUT J8007 MSP-213V1-652_NI_LF

DVD_C, DVD_Y, DVD_U, DVD_V

C8006 0.1 B
Y/C MIX IC IC8003 MM1511XNRE
Vcc, NC, 15kHz, 6dB, 3dB
L8006 100uH 0305
P.CON+5V
DVD_V_OUT
Y/C_VIDEO_OUT
C8031 50V 4.7 KA
R8044 470 1/4W
BUFFER Q8023 KTA1504S_Y_RTK
C8012 10V 100 YK
C8019 0.1 F
C8010 25V 10 KA
AV SW IC IC8005 MM1501XNRE
Vin1, Vin2, GND, V OUT, SW, Vcc
C8057 0.1 F
SW Q8024 DTC114EKA
AV_SW1
SW_V_OUT
P.CON+9V
W823

FROM/TO Y/C/AUDIO/CCD/HEAD AMP
- DVD_V_OUT
- FSC
- TU/REAR_V_IN
- REAR_V_IN
- Y/C_VIDEO_OUT

FROM/TO SYSCON
- DVD_POWER_CTL
- DVD_RESET
- SYS_MUTE
- SCL
- SDA
- AV_SW1
- TV/VCR
- RF_CH_SW
- AFT-S.CURVE
- POWER_MUTE-L
- VIDEO_MUTE-H
- VIDEO_OUT
- SW_V_OUT

FROM/TO Hi-Fi/DEMODULATOR
- DVD_A_OUT_R
- DVD_A_OUT_L
- SIF_OUT
- REAR_A_IN_L
- REAR_A_IN_R
- AUDIO_OUT_L
- AUDIO_OUT_R
- RF_CONV_A_OUT

FROM/TO POWER
- GND
- +32V
- AT+5.2V
- P.CON+5V
- P.CON+12V
- SPDIF
- P.CON+9V

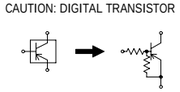
SYS_MUTE, P.CON+5V, ZERO, AT+5.2V
R8025 1K
R8034 33K 1/4W
D8006 1SS133
R8027 4.7K
D8004 1SS133
D8005 1SS133
C8034 6.3V 220 YK
R8024 4.7K
MUTE DET Q8012 KTC3875S_Y_RTK
R8036 470K
C8032 50V 4.7 KA
R8023 1K
MUTE SW Q8002 DTC144EKA
MUTE SW Q8011 DTC124EKA
C8033 220P CH
R8021 1K
R8022 1K
MUTE SW Q8010 DTA143EKA
AUDIO MUTE Q8009 KTC3875S_Y_RTK
AUDIO MUTE Q8008 KTC3875S_Y_RTK
DVD_A_OUT_R, DVD_A_OUT_L
R8012 470
R8008 470
W820
C8025 0.1 B
D AUDIO DRIVER Q8001 KTC3875S_Y_RTK
DVD AUDIO OUT COAXIAL J8005 MSP-213V1-732_NI_LF
C8028 100P CH
R8007 100K
L8007 100uH 0305
R8003 1.5K
R8054 2.2K
R8006 68
R8005 220
R8002 3.3K
C8024 6.3V 47 KA
C8023 0.022 B

RF MUTE SW Q301 KTC3875S_Y_RTK
R301 33K
R305 1K1/4W
C315 25V10 KA
R304 1K
C318 25V 10 KA
RF_CONV_A_OUT
RF_CH_SW
L301 22uH 0305
P.CON+5V
TV/VCR
R302 1K
C309 6.3V 220 YK
TU301 115-V-HA35ARE
A.IN, CH, +B, CONTROL, V.IN
NC, FSC, NC, CLOCK, DATA, AFT, A.OUT, SIF OUT, TU 32V, NC, V.OUT
C308 0.01 B
W879
R306 100
FSC
C302 100P CH
SCL
SDA
AFT-S.CURVE
C317 100P CH
SIF_OUT
+32V
C303 0.1 F
C313 50V 1 KA
TU/REAR_V_IN
W810

REAR_V_IN, REAR_A_IN_L, REAR_A_IN_R
W808
R8001 75
REAR IN JACK J8002 MSP-213V2-432_NI_LF

POWER_MUTE-L, AT+5.2V, AUDIO_OUT_R, AUDIO_OUT_L
R8059 4.7K 1/4W
MUTE SW Q8007 DTA124EKA
R8032 150
R8056 150
R8014 100
R8015 100
R8016 2.2K
R8017 2.2K
MUTE SW Q8006 KTC3875S_Y_RTK
MUTE SW Q8005 KTC3875S_Y_RTK
C8005 6.3V 470 YK
R8009 4701/2W
C8011 6.3V 220 KA
L8009 100uH 0305
P.CON+12V
VIDEO_OUT
C8013 50V 10 KA
R8011 100 1/4W
C8014 0.1 F
R8010 68
BUFFER Q8004 KTA1266
VIDEO MUTE SW Q8003 DTC124EKA
VIDEO_MUTE-H
REAR OUT JACK J8001 MSP-213V1-432_NI_LF

CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

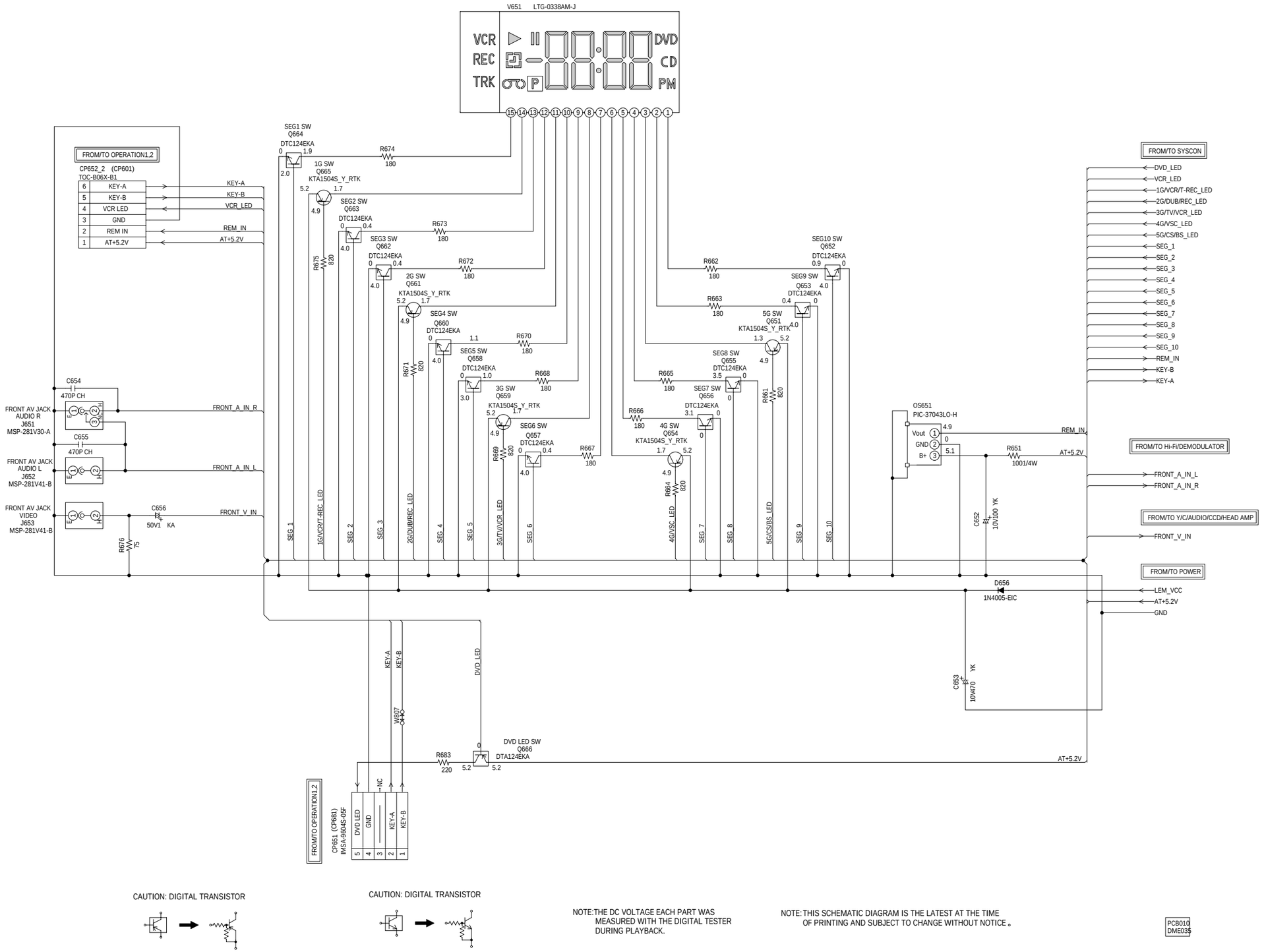
CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

PCB010 DME035

OPERATION/DISPLAY SCHEMATIC DIAGRAM

(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

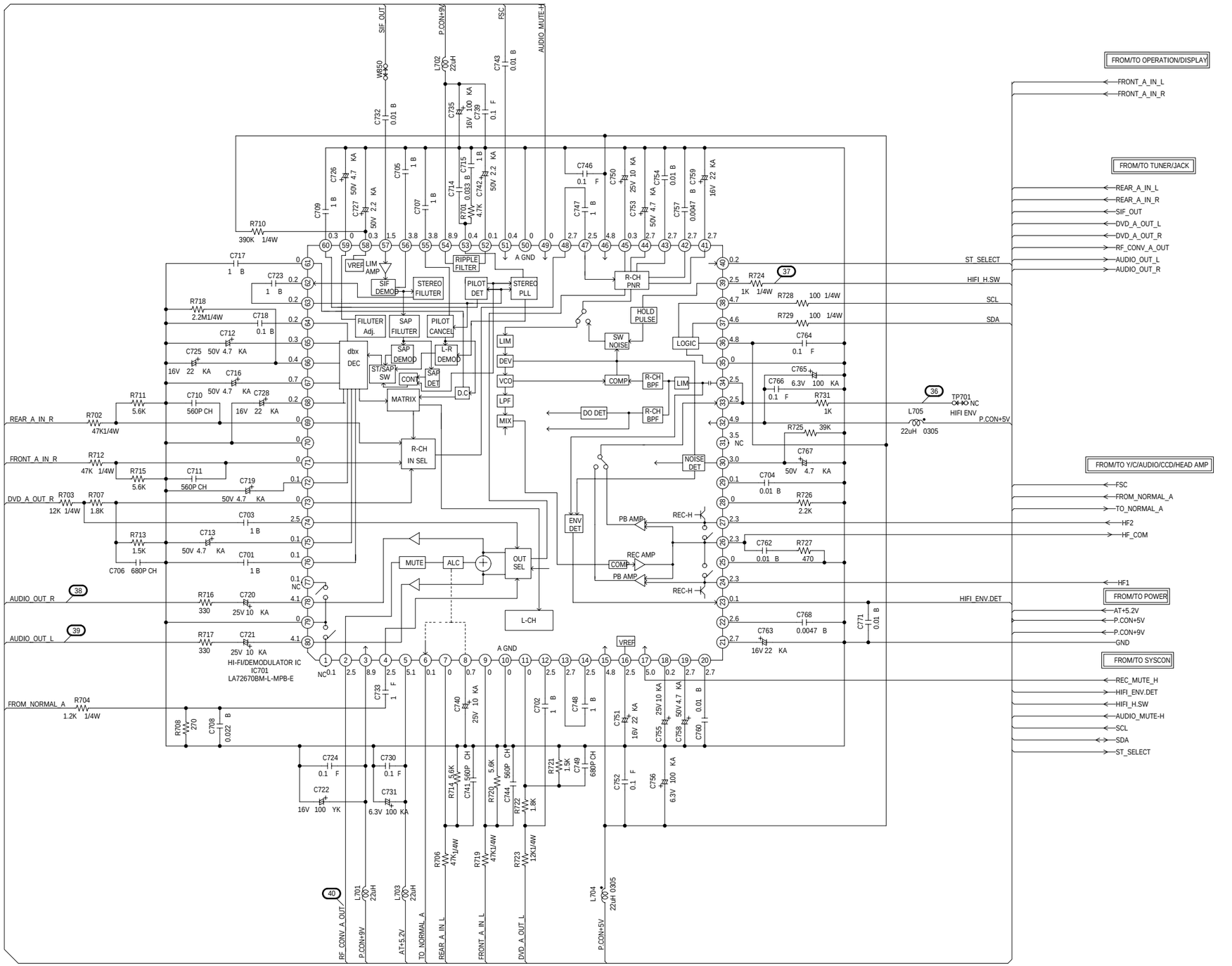
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

PCB010
DME035

Hi-Fi/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)



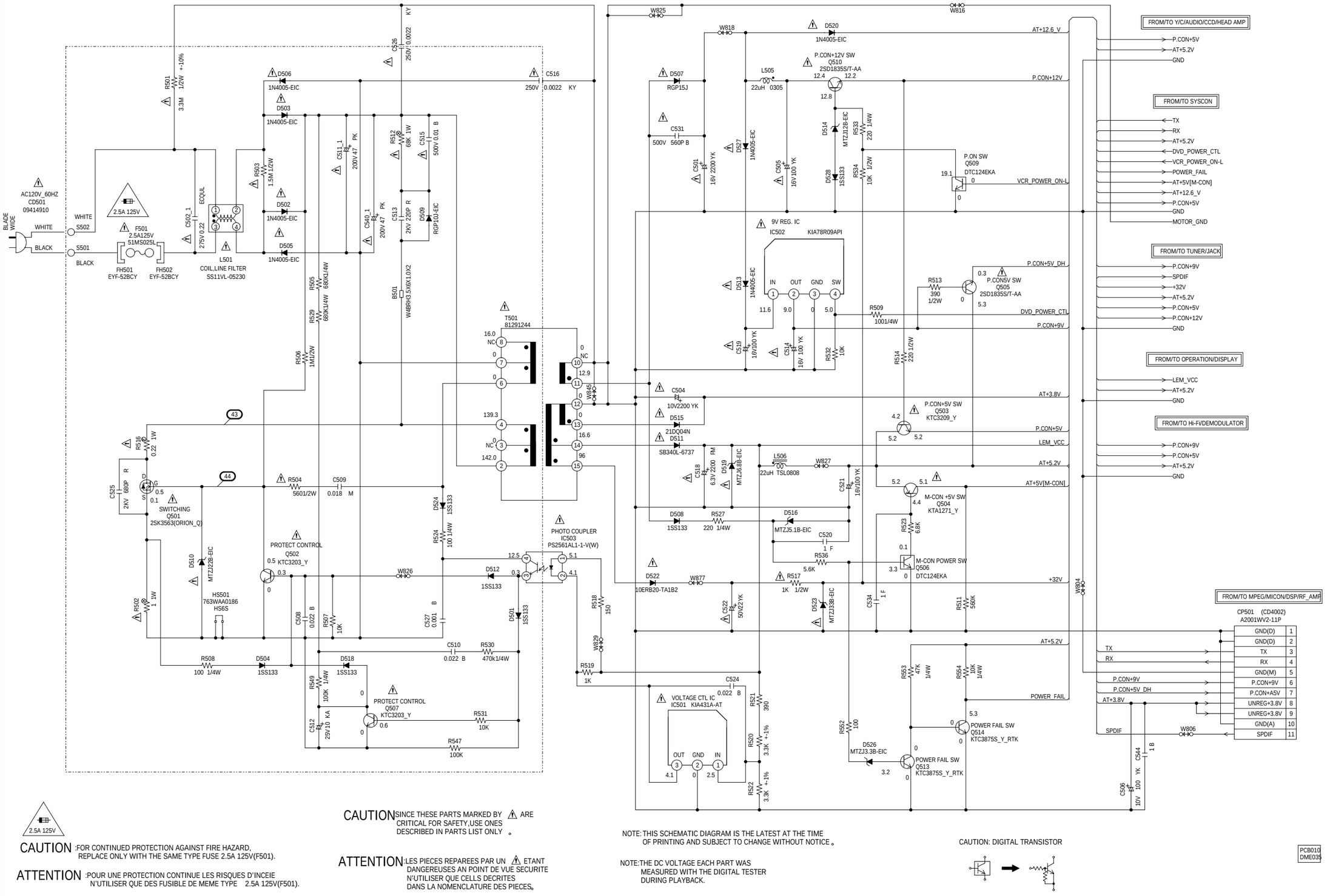
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

PCB010
DME035

POWER SCHEMATIC DIAGRAM

(VCR PCB)



2.5A 125V

CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 2.5A 125V(F501).

ATTENTION :POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 2.5A 125V(F501).

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

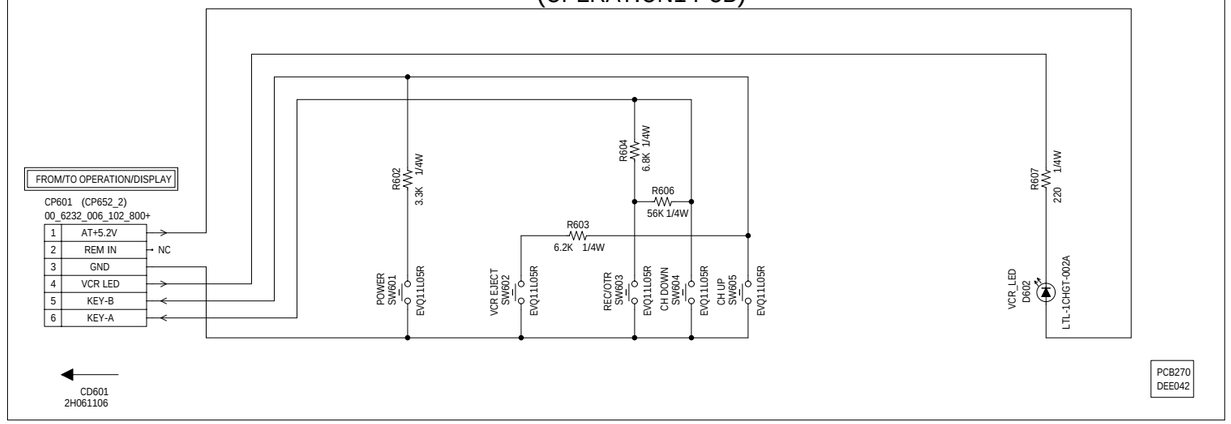
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

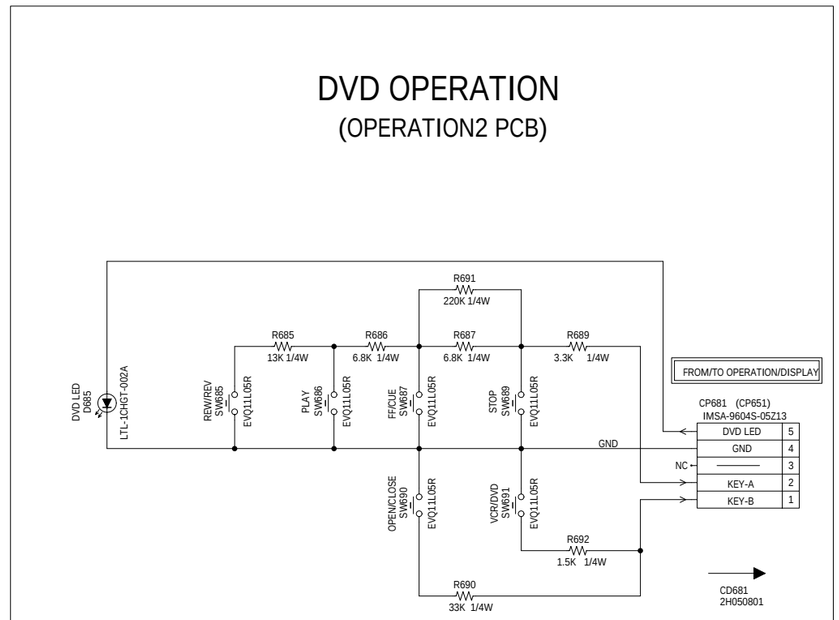
CAUTION: DIGITAL TRANSISTOR

OPERATION1,2 SCHEMATIC DIAGRAM

VCR OPERATION
(OPERATION1 PCB)



DVD OPERATION
(OPERATION2 PCB)

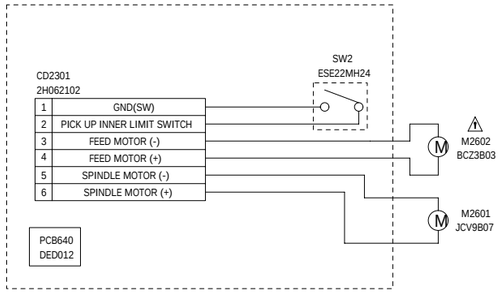


NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

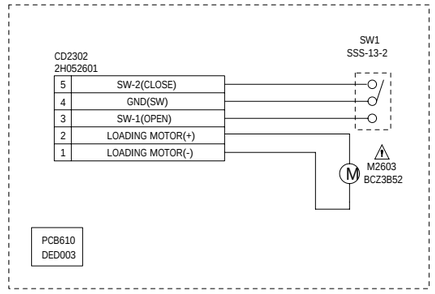
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

LOADING MOTOR/SW SCHEMATIC DIAGRAM

(SW PCB)



(LOADING MOTOR PCB)

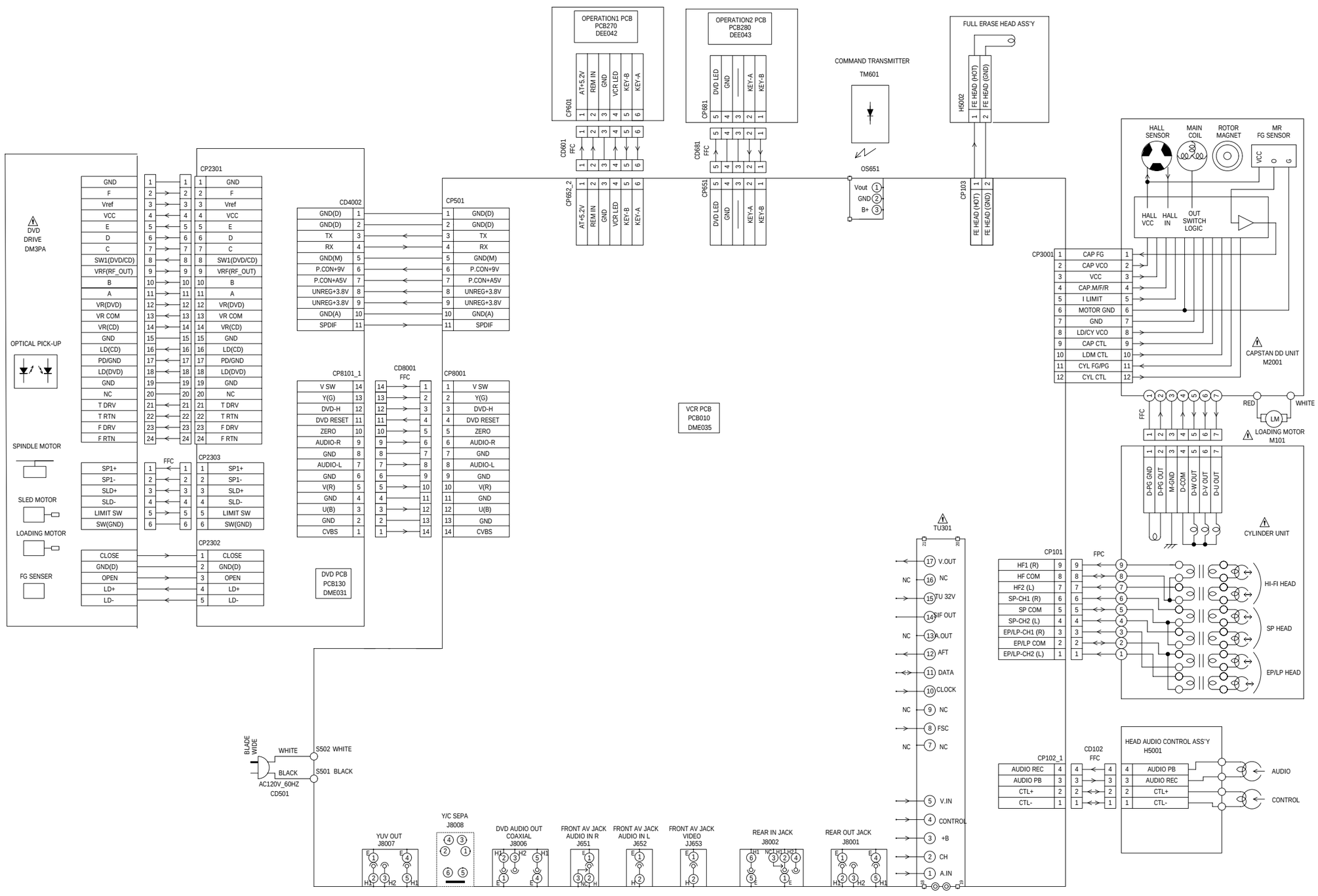


CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

INTERCONNECTION DIAGRAM



CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

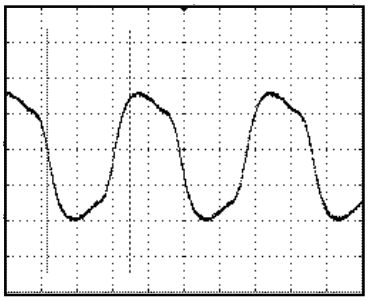
ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

WAVEFORMS

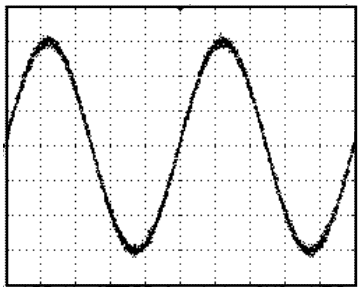
MPEG/MICON/DSP/RF_AMP

10ns
100mV



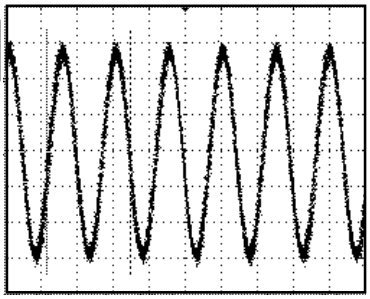
①

200µs
500mV



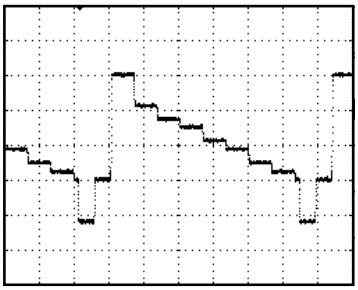
⑥

5ns
20mV



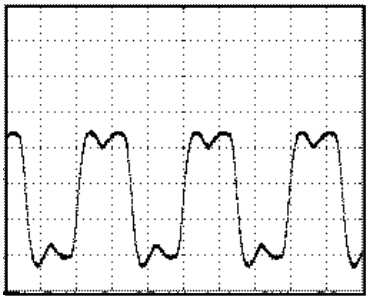
②

10µs
500mV



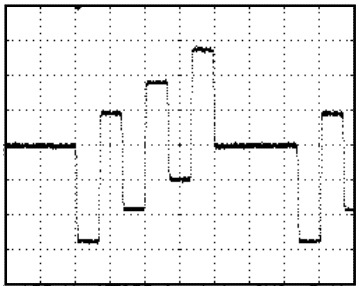
⑦

20ns
1.0V



③

10µs
200mV

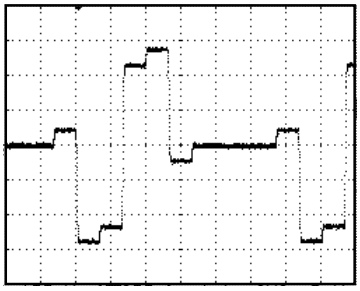


⑧

200ns
1.0V

④

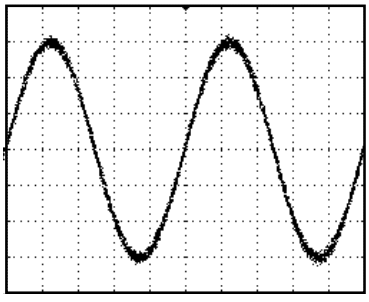
10µs
200mV



⑨

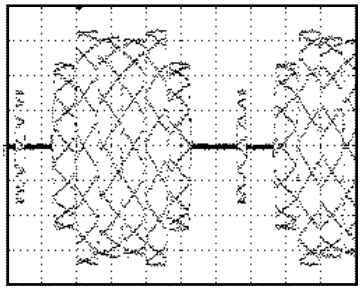
AUDIO/VIDEO

200µs
500mV



⑤

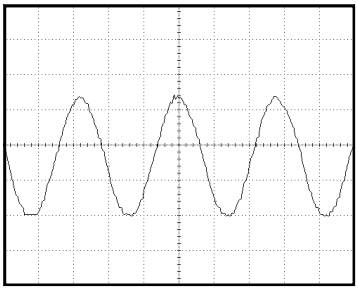
10µs
200mV



⑩

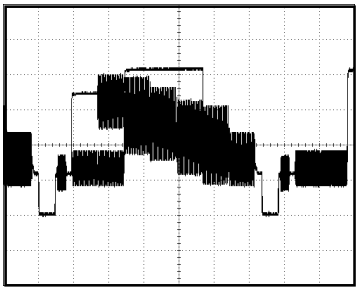
Y/C/AUDIO/CCD/HEAD AMP

PB
100ns
100mV



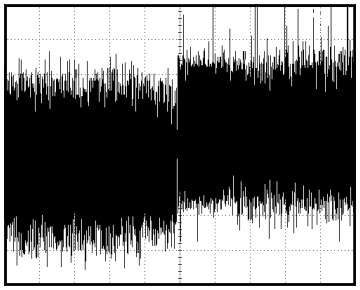
⑮

PB
10µs
500mV



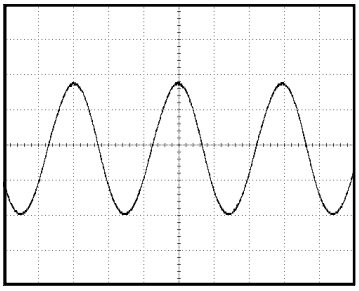
⑯

PB
1ms
100mV



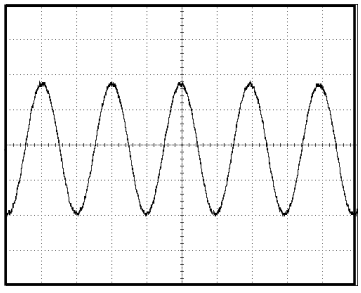
⑰

REC
5µs
20V



⑱

PB
200ms
500mV



⑲

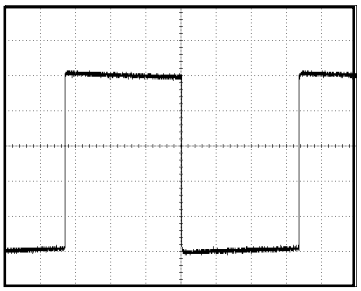
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

SYSCON

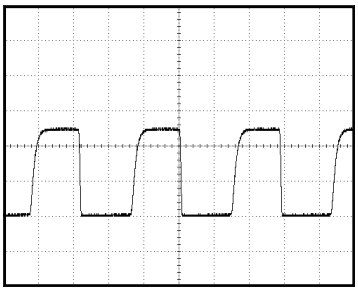
PB
5ms
1.0V

(21)



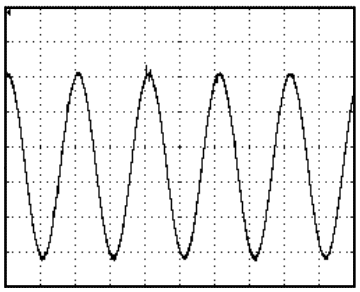
PB
5ms
2.0V

(27)



PB
500µs
200mV

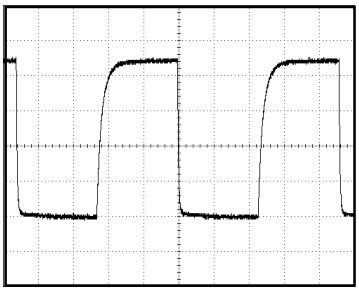
(39)



TUNER/JACK

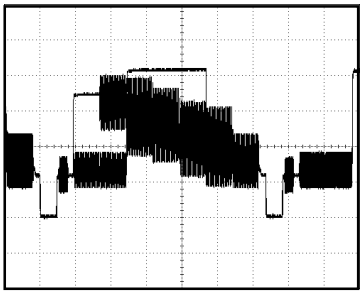
PB
200µs
1.0V

(22)



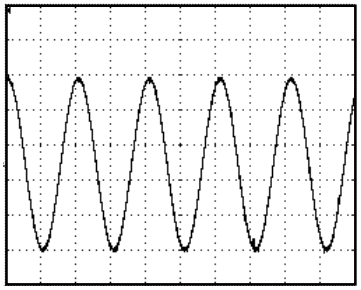
PB
10µs
200mV

(32)



PB
500µs
200mV

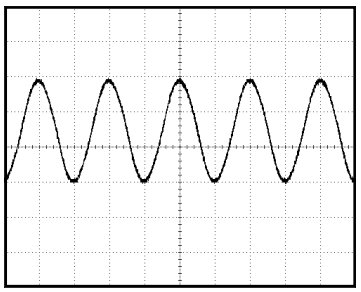
(40)



Hi-Fi/DEMODULATOR

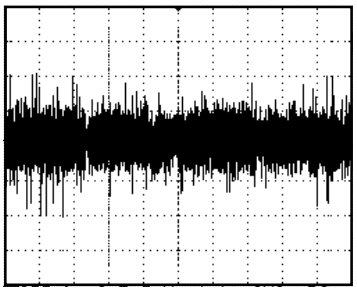
POWER ON
50ns
1.0V

(23)



PB
10ms
1.0V

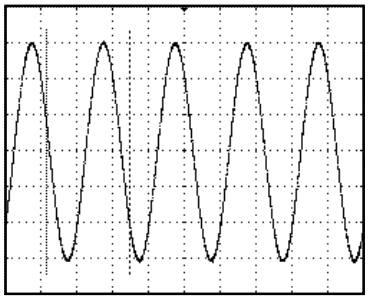
(36)



TUNER/JACK

PB
500µs
100mV

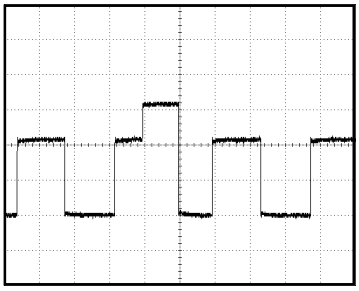
(42)



POWER

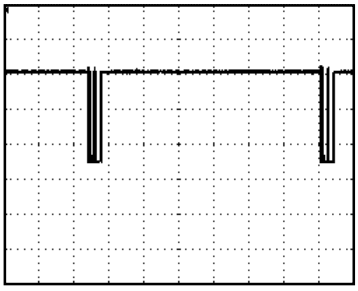
PB
500µs
1.0V

(24)



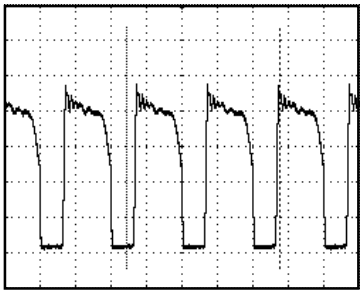
PB
1ms
2.0V

(37)



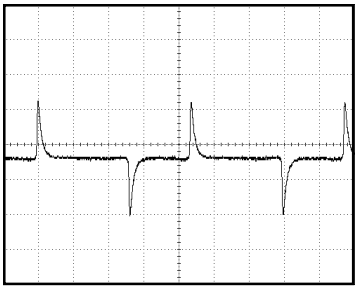
PB
5µs
500mV

(43)



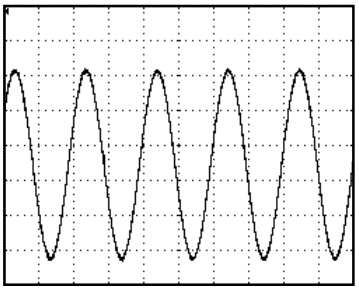
PB
5ms
500mV

(25)



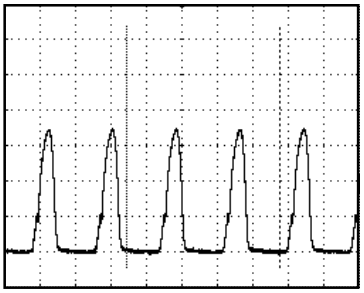
PB
500µs
200mV

(38)



PB
5µs
5.0V

(44)



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN